DOCUMENT RESUME

ED 133 475 08 CE 009 279

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TITLE Assisting Industrial Arts Teachers in Integrating Occupationally-Oriented Activities into Their Existing Instructional Programs. Final Report.
INSTITUTION Northeast Missouri State Univ., Kirksville.
SPONS AGENCY Bureau of Elementary and Secondary Education (DHEW/OE), Washington, D.C.
BUREAU NO 3-F-75
PUB DATE Sep 76
GRANT OEG-370-75-0025(504)
NOTE 115p.; Prepared by Division of Practical Arts

EDRS PRICE MF-$0.83 HC-$6.01 Plus Postage.
DESCRIPTORS *Career Education; Curriculum Development; Industrial Arts; *Industrial Arts Teachers; *Inservice Teacher Education; *Integrated Curriculum; *Metals; Pilot Projects; *Program Development; School Industry Relationship; Secondary Education; Teacher Improvement; Trade and Industrial Education; Trade and Industrial Teachers
IDENTIFIERS Missouri

ABSTRACT

The pilot project was intended to provide the industrial arts metals teachers with experiences and opportunities needed to help them plan, develop, and introduce occupationally-oriented information, activities, and experiences into industrial arts classes. Fourteen industrial arts metals teachers in the State of Missouri were selected from grades 8, 9, and 10 in those school districts having vocational education programs in metals, machine shop, and/or vocational programs related to the cluster of occupations in the metals industry. The teachers particpated in an inservice practicum whose content was based on survey findings sent to industrial arts metals teachers, vocational education metals teachers, selected firms within the metals industry, and representatives of labor. Teachers were pretested before the practicum, offered the practicum, then posttested. Evidence of the achievement of the projects purpose was provided by gains reported from pretest and posttest evaluations. Also, evaluative comments by participants supported the pretest and posttest evaluations. This report explains the total project in four sections: (1) Introduction, (2) Methodology, (3) Presentation and Analysis of Practicum Activities, and (4) Conclusions and Recommendations. Ten Appendices and 12 tables are included. (MD)

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ED133475

FINAL REPORT

ASSISTING INDUSTRIAL ARTS TEACHERS IN INTEGRATING OCCUPATIONALLY-ORIENTED ACTIVITIES INTO THEIR EXISTING INSTRUCTIONAL PROGRAMS

E.P.D.A. PART F, Section 553

Subproject No. 3, F

Grant No. G 370-75-0025 (504)

BY

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1976

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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P R O J E C T N A R R A T I V E

SECTION ONE

INTRODUCTION

During the spring of 1975, the Division of Practical Arts of Northeast Missouri State University was awarded an Educations Professions Development Act (E.P.D.A.) Grant from the Department of Elementary and Secondary Education (Vocational Division) in conjunction with the Regional U. S. Office of Health, Education and Welfare. The general purpose of the grant was to conduct an in-service practicum to assist the Industrial Arts Metals teachers in the State of Missouri integrate occupationally oriented activities into their existing instructional programs. The practicum was held in two parts during the weeks of June 14 through June 18 and June 21 through June 25, 1976.

Background Information

Research and developmental projects of the past indicate that many innovative vocational educators recognized the importance and interrelatedness of industrial arts to vocational education. With the emergence of the career education concept, this interrelatedness became more apparent and the need to include industrial arts as part of vocational education began to surface. Finally, on December 21, 1973, this important "inclusion" became a reality when the following amendments to Public Law 92-318 included specific industrial arts education instruction as part of vocational instruction:

"Industrial arts education programs mean those education programs (1) which pertain to the body of related subject matter, or recreational, organizational, managerial, social, historical, and cultural aspects of industry and technology including learning experiences involving activities such as experiments, designing, construction, evaluating and using tools, machines, materials, and processes which provide opportunities for creativity and problem solving and assisting individuals in the making of informed and meaningful occupational choices; and (2) which the Commissioner has determined, pursuant to 102.4(b) (5), will accomplish or facilitate one or more of the purposes of the first sentence of section 108(1) of the Act."

102.4 Vocational Instruction.

"(5) Industrial arts education instructional programs with the objectives specified in subparagraph (1) of this paragraph shall be designed to:

(i) Assist individuals in the making of informed and meaningful occupational choices. In order to accomplish or facilitate this purpose, such programs shall:

(a) provide occupational information and instruction pertaining to a broad range of occupations, including training requisites, working conditions, salaries or wages, and other relevant information!

(b) provide exploratory experiences in shops, laboratories, and observations in business or industry to acquaint students with jobs in the occupations included in this purpose;

(c) provide guidance and counseling for students enrolled in the industrial arts program under 102.4(b) (5) of this part to assist them in making informed and meaningful choices in selected occupational fields; and

(d) employ industrial arts teachers who have qualifications as provided in the State Plan pursuant to 102.38; or,

(ii) prepare individuals for enrollment in advanced or highly skilled vocational and technical education programs. In order to accomplish or facilitate this purpose, such programs shall:

(a) Provide individuals with occupational information and exploratory experience for enrollment in such programs;

(b) provide occupational information and exploratory experiences directly related to current practices in industry; and

(c) be conducted in an institution approved by the State Board of Vocational Education and by industrial arts teachers and guidance and counseling personnel who have qualifications as provided in the State Plan pursuant to 102.38."

Unfortunately, it became obvious that many industrial arts educators did not possess the necessary experiences needed to effectively implement the objectives of the amendments. As a result, many states have elected not to fund industrial arts education programs until the industrial arts educators have increased their exposure to enable them to comply with the amendments to the Act.

With the above in mind, the State Supervisor of Industrial Arts in Missouri developed a plan which would assist the industrial arts teachers gain those experiences needed to implement occupationally-oriented activities into their industrial programs. As part of the total plan, this project served as a pilot in-service training program directed specifically at the Metals Industry and the Industrial Arts Metals teachers.

E.P.D.A. and State Plan Priorities - State of Missouri

The project was also specifically designed to fall within the parameters of the 1975 E.P.D.A. State Priorities and the Missouri State Plan for Vocational Education.

One of the E.P.D.A. priorities for fiscal year 1975 developed by the Missouri State Advisory Committee on E.P.D.A. was to provide:

a. In-service development of industrial arts teachers to implement pre-vocational programs.

The following goals stated in the Missouri State Plan were also applicable to the project:

Applicable to professional development: Provide professional personnel development for local educational agencies through a program of pre-service and in-service occupational education.

> Applicable to implementation but requiring specific professional development: 1) provide integrated career development programs for students in grades K through adulthood; 2) maintain and expand programs and services for increasing numbers of secondary students commensurate with labor market demands; 3) maintain and expand programs and services for persons who desire and need post-secondary occupational education to successfully enter the labor market.

The E.P.D.A. priority was achieved through this project by providing the industrial arts teacher experiences relevant to the implementation of the pre-vocational concept as implied by the amendments to the Act (See Project Agenda - Appendix B).

The practicum experiences in the project were designed to help the industrial arts teacher to more effectively contribute to the achievement of the goals of vocational education as stated in the Missouri State Plan.

Justification

According to Missouri State Plan for Vocational Education (1975), secondary and post-secondary occupational programs were projected to be expanded and improved over the next five years to accommodate 1) the increase in the number of students and 2) meet labor market demands. With this in mind, it was apparent that appropriate and up-to-date occupational information should be disseminated to the students making an occupationally-oriented education decision. The project directors also felt that those presently employed as industrial arts teachers must be given the opportunity to develop the minimum professional and technical competencies necessary to effectively implement the pre-vocational program concept.

Therefore, the primary purpose of this project was to provide the industrial arts teachers with experiences and opportunities needed to help them plan, develop, and implement occupationally-oriented information, activities, and experiences into their industrial arts classes.

This project also served as a pilot project. It was intended that the results of the project would substantiate the need and desirability for expanding and continuing the in-service activities for industrial arts teachers as proposed.

It is also the concensus of the project directors that until occupational experience is a requirement for certification as an industrial arts teacher, the in-service practicum approach is a viable alternative for providing the industrial arts teacher with those experiences needed to implement the pre-vocational concept.

Objectives

The objectives of the project were to increase those competencies of the industrial arts teacher which would enable them to more effectively:

1. Assist individuals in the making of informed and meaningful occupational choices by providing:

   (a) occupational information and instruction pertaining to a broad range of occupations including: training requisites, working conditions; salaries or wages, and other relevant information;

   (b) exploratory experiences in shops, laboratories, and observations in business or industry to acquaint students with jobs in the occupations included in this purpose;

   (c) guidance and counseling for students enrolled in the industrial arts program and assist them in making informed and meaningful choices in selected occupational fields.

2. Prepare individuals for enrollment in advanced or highly skilled vocational and technical education programs by providing:

   (a) individuals with occupational information and exploratory experience for enrollment in such programs;

   (b) occupational information and exploratory experiences directly related to current practices in industry.

3. Become more familiar with new equipment and technology.

4. Develop a more complete awareness, understanding and appreciation of the world of work.

5. Relate experiences when implementing the pre-vocational education concept.

Purpose

As previously stated, the primary purpose of this project was to provide the industrial arts teachers with experiences and opportunities needed to help them plan, develop, and introduce occupationally-oriented information, activities, and experiences into industrial arts classes. It was also stated that the project was intended to serve as a pilot project, anticipating that it will serve as a model for other institutions.

Participants

Although industrial arts permeates a number of occupational areas, it was felt desirable to limit the participants of this project to teachers of industrial arts metals courses, grades 8, 9, and 10. The participants were selected from those school districts having vocational education programs in metals, machine shop and/or vocational programs related to the cluster of occupations in the metals industry. Fourteen industrial arts metals teachers in the State of Missouri were selected to participate (See Appendix A).

Criteria for Eligibility of Participants

The following criteria were used to determine the eligibility of the participants:

1. Each participant was requested to show evidence of his commitment to the vocational education concept and/
2. The participants were also recommended by a vocational educator and/or administrator.

Implementation of the Program in Schools and Institutional and Systematic Change

Northeast Missouri State University presently offers a Bachelor of Science in Education degree in Industrial Arts Education. Also, for the past ten years, in-service and pre-service practicums, seminars, and workshops have been provided for industrial arts teachers in areas such as The World of Manufacturing, The World of Construction, industrial plastics, home maintenance and repairs, and upgrading electricity and electronics in the junior and senior high schools. The short as well as the long-term pre-service and in-service personnel development concept is not only accepted, but considered essential for the advancement and improvement of teachers.

Dissemination

This report was disseminated to the Department of Elementary and Secondary Education (Vocational Division), the state universities in Missouri, Industrial Arts Association of Missouri, the Industrial Arts Division of the Missouri Vocational Association and the project participants.

Assessment and Evaluation

A pretest, post-test was administered to measure the effectiveness of the project's activities (See SECTIONS TWO and THREE).

A follow-up study is planned to ascertain the degree of implementation of the occupationally-oriented concepts, relationships and knowledge. Finally, each participant had agreed to submit an occupationally-oriented Industrial Arts Program Implementation Proposal to the Department of Elementary and Secondary Education. At the conclusion of the practicum, the majority of the participants had developed the first draft of their proposals.

Approach Used

After carefully reviewing alternative methods for determining the content and activities for the practicum, the project staff decided to develop a questionnaire for that purpose. The questionnaire was sent to industrial arts metals teachers, vocational education metals teachers, selected firms within the metals industry, and representatives of labor. Also, a number of personal contacts with union and industry representatives were made. Based on the survey findings and the personal interviews, the content and activities for the practicum were finalized. For specifics, see SECTION TWO.

Procedures*

The general procedures used in the project were as follows:

The project staff:

1. Arranged appropriate practicum experiences with selected industrial firms to expose participants to the various employment possibilities in the metals working field.
2. Reviewed and selected relevant instructional materials and films adaptable to the industrial arts pre-vocational concept.
3. Synthesized the findings of 1 and 2; a) developed pre- and post-tests and b) developed sequence of specific project activities.

*(See Appendix B for Specific Practicum Activities)

4. Informed the population of project and requested applications.
5. Selected participants.
6. Pretested the participants.
7. Offered the practicum.
8. Post-tested the participants
9. Ascertained knowledges, skills, attitudes gained.
10. Drafted and disseminated the Final Report.

SECTION TWO

METHODOLOGY

The techniques utilized to prepare for and conduct the Occupationally Oriented Industrial Arts Practicum included 1) identification of content, 2) identification of participants, and 3) development and coordination of a schedule of events for the practicum.

Identification of Content

The identification of content for the practicum was accomplished in part by collecting data from vocational technical metals teachers, industrial arts metals teachers, selected industrial firms, and labor unions representing workers in the various metal working industries throughout Missouri (See Appendices D, E, and F).

Vocational-Technical Teachers

The Vocational metals programs were identified by surveying the directors of the vocational-technical schools in Missouri. The directors were asked to identify 1) the types of metals programs (i.e. sheet metal, welding, machine shop, foundry, etc.) available in their respective schools, and 2) the sending school districts from which they received vocational students. Results of the survey also provided the project staff with a list of the vocational metals teachers in Missouri. These teachers were then used as the population representing the metals vocational technical programs - see Appendices C and D). As previously stated, the vocational metals teachers were then requested to assist the project staff in developing the content for the practicum by completing a survey designed for that purpose.

Industrial Arts Metals Teachers

The industrial arts metals teachers were identified by Mr. Gene

Brightwell, Supervisor of Industrial Arts in the State Department of Elementary and Secondary Education.

Those teachers identified as teaching sheet metal, machine shop, foundry, or general metals were the population for the industrial arts teachers. These teachers were then requested to assist the project staff in developing the content for the practicum by completing the content survey.

Management/Manufacturers

The Missouri Director of Manufacturers was used as the source of the population for this segment of the project. Firms were randomly selected according to the number of employees and geographic location. Manufacturers were selected on the basis of their primary product utilizing some form of metal fabrication or assembly (Appendix F). The firms selected were requested to complete the content survey.

Unions

Twenty-seven unions were identified to represent a major portion of the metal working industry. Questionnaires were mailed to representatives of these labor organizations (Appendix F).

Instrument Development

The instruments utilized to collect data from the above named groups were developed by the project staff. Three categories of characteristics traditionally accepted as the responsibility of educational institutions providing individuals with instruction for entry level employment were included in the questionnaire. The items on the instruments were classified according to occupational attitudes, occupational knowledge and occupational skills.

The vocational teachers were asked to identify the importance of each item or characteristic of a beginning student in their occupational class. They were also asked to indicate the adequacy or inadequacy of the entering students' preparation relative to each item on the survey.

The industrial arts metals teachers were requested to indicate the amount of emphasis each item received in their classes.

The management and labor groups were asked to indicate the emphasis that the industrial arts metal working teachers should place on the development of the items within the classification of occupational attitudes, knowledge, and skills.

The levels of importance or emphasis by each group was identified according to their means. The range of importance or emphasis was from 0 (no importance or emphasis) to 4 (complete preparation or very heavy emphasis). The results of the survey may be seen in Table I.

Although a portion of the survey instrument collected data with reference to specific skills, this information received minor emphasis in the practicum since the primary objectives of the project centered around the pre-vocational concept. Also, the objectives of an Occupationally Oriented Industrial Arts Program, as stated by the Missouri State Department of Elementary and Secondary Education, indicates that emphasis should be on the addition of a pre-vocational component to complement existing industrial arts programs. The results of the survey also indicated that existing programs were providing an acceptable level of skill development. An analysis of the data, consultations with project advisors, and a review of existing attempts to provide Occupationally-Oriented Industrial Arts, led project personnel to emphasize experiences which would allow the participants to gain oc-

TABLE I

Mean Values of Responses from Survey Form

CATEGORY OF KNOWLEDGE: (knowing)	Area of Representation			
	Industrial Arts	Vocational Education	Management	Labor
Machine and tool nomenclature	3.06	1.59	2.67	2.75
Composition of metals and alloys	2.11	1.42	2.25	1.75
Metrics	1.21	1.71	2.47	2.00
Measurements	3.00	2.71	3.22	3.50
Blueprint reading	2.42	2.44	3.35	3.25
Speeds and feeds	2.10	1.34	2.57	2.50
Threads and threadings, drill sizing, decimal equivalency	2.65	1.57	2.60	2.75
Metalworking occupational requirements	2.21	1.91	2.25	3.25
Metalworking occupational opportunities	2.21	2.02	2.25	3.00
Metalworking occupational benefits	2.04	1.97	2.20	2.75
Educational requirements for metalworking occupations	2.01	2.16	2.35	3.25
Metalworking occupational conditions	1.94	1.93	2.02	3.00
Function and responsibilities of labor unions associated with metal working occupations	1.08	1.36	1.45	3.50

TABLE I (continued)

CATEGORY OF ATTITUDES:	Area of Representation: Industrial Arts	Vocational Education	Management	Labor
An appreciation for quality craftsmanship	3.31	2.67	3.50	3.50
Development of a good work ethic (days work for days pay)	3.20	2.97	3.57	3.75
Acceptance of responsibility	3.40	2.97	3.35	3.75
Dependability	3.23	2.95	3.42	3.75
Integrity	3.22	2.97	3.22	3.50
Safety consciousness	3.73	3.24	3.37	3.75
Cleanliness	3.12	2.40	2.87	3.25
Orderliness	3.23	2.61	3.02	3.00
Willingness to accept constructive criticism	2.84	2.87	3.10	3.25
Willingness to go beyond requirements	2.77	2.65	3.20	2.75
Initiative	3.03	2.77	3.20	3.25
Cooperation	3.35	2.95	3.07	3.25

TABLE I (Continued)

	Area of Representation			
	Industrial Arts	Vocational Education	Management	Labor
CATEGORY OF SKILL: (doing)				
Read and interpret technical data	2.38	2.06	3.05	3.00
Hand tool procedures and usage	3.34	2.38	3.05	3.25
Layout and measurement procedures	3.29	2.40	3.17	3.25
Sheet metal procedures and operations	2.92	1.48	2.40	3.25
Forging	2.33	1.10	1.77	1.50
Heat treating	2.31	1.38	2.12	2.00
Casting	2.62	1.06	2.02	1.75
Anodizing, plating and finishing	1.15	0.71	1.60	1.75
Lathe procedures and operations	2.96	1.40	2.47	2.75
Shaper procedures and operations	1.36	1.20	1.97	2.25
Bandsaw procedures and operations	2.30	1.75	2.32	2.25
Cutoff saw procedures and operations	2.09	1.42	2.25	2.25
Milling machine procedures and operations	2.04	1.32	2.60	2.50
Drilling machine procedures and operations	2.91	1.59	2.65	3.00
Grinding machine procedures and operations	2.45	1.57	2.57	2.50
A-C arc welding operations	2.96	1.40	2.27	2.75
D-C arc welding operations	1.40	1.42	2.27	2.50
Mig and Tig welding operations	1.00	1.20	2.20	2.50
Oxy/acetylene welding operations	3.00	1.55	2.22	2.50

cupational information concerning work attitudes and knowledge. In addition, sources of occupational information, location and types of advanced educational programs were also identified as a part of the pre-vocational component of industrial arts.

Identification of Participants

The criteria for selection of the participants for the Occupationally-Oriented Industrial Arts (O.O.I.A.) practicum included the requisities that the industrial arts teacher be: 1) a teacher of industrial arts metals courses, grades 8, 9, 10; 2) teaching in a district which had direct access to a vocational program in metals, machine shop and/or a vocational program related to the cluster of occupations in metal working and 3) teaching in the district served by Northeast Missouri State University. Because of limited funds the number of participants was not to exceed 20.

To identify the potential participants, the directors of the AVTS, which had an existing metals program, were requested to identify the school districts from which they received students. This list of school districts was cross referenced with the director of school personnel provided by the State Department of Elementary and Secondary Education to identify the tentative participants. Each individual identified was contacted by mail to determine there interest as a participant of the in-service program.

It was anticipated that there were not 20 teachers meeting the selection criteria within the district served by Northeast Missouri State University. Therefore, industrial arts metals teachers from outside the district were considered for selection. Twenty-four teachers responded that they would like to be considered for selection. Of this number, three were from the northeast districts.

All 24 potential participants were invited to attend the practicum. Of the 24, 14 elected to attend the practicum. A list of the individuals and positions are listed in Appendix A. The participants represented all geographic regions of the State with exception of the southeast.

Development of Practicum Events

In order to provide an explanation of the project goals and objectives to the potential participants, consultants, cooperating industrial firms, labor, and other interested individuals, a Project Information Sheet was developed. (Appendix G). The Project Information Sheet was then disseminated to the above individuals.

Initial plans called for industrial arts teachers to participate in a "shadowing" experience within each of the respective industries. Through preliminary consultation with industrial and labor representation, it was ascertained that this was an activity untenable to the production firm. Industrial representatives suggested an alternative plan wherein extensive small group tours, observation activities coupled with interviews with workers, and group discussions concerning occupationally-oriented information would be provided by the hosting firm. This alternative plan was adopted.

In addition to the industrial tours, a conference with union representatives seemed appropriate. This experience was proposed to allow insight into the relationship which exists between employers and employees.

Also, speakers were selected to provide information relative to occupationally-oriented industrial arts. Representatives from the State Department of Elementary and Secondary Education were scheduled

to enlighten the participants concerning the status of O.O.I.A. within the state. A presentation concerning career education in total education being conducted by the Hazelwood School District in St. Louis County, Missouri, was also scheduled.

The agenda for week two of the practicum was designed to provide the participants an opportunity to expand their knowledge concerning OOIA. This agenda included the investigation of commercially prepared audio-visual materials, textbooks, references, introduction to post industrial arts occupational training alternatives, guidance activities, alternative teaching methodology and occupational information.

For a list of the commercially prepared A-V materials, textbooks and references, see Appendix H.

For a list of industrial, labor and educational consultants (See Appendix J).

SECTION THREE

PRESENTATION AND ANALYSIS OF
PRACTICUM ACTIVITIES

General Description of Practicum Procedures

The Occupational Oriented Industrial Arts Practicum was designed and conducted as a two-phase experience. Each phase was conducted within a five-day time space. For reasons of administration and fiscal responsibility, each phase was initially treated as a separate entity unrelated to the other phase. Practical consideration, however, dictated that a portion of the second week had to be used as a unifying element.

The first week of the Practicum was conducted in the metropolitan area of St. Louis and St. Louis County where superb cooperation of industry and labor was available.

Preliminary procedure of week one consisted of introductions, registration, assignment of rooms, general directions and an overview of the practicum. It also provided opportunity to direct the attention of the participants to the purposes of Occupationally Oriented Industrial Arts. Emphasis was given to "people oriented" considerations rather than the material or process viewpoint as the primary information to be gained from the practicum experiences.

Tours and meetings were arranged with industrial firms representing four areas of metalworking often found in the industrial arts setting.

The divisions of the metalworking field and the respective firms visited were:

(1). Sheet metal - McDonnell's

(2). Foundry - Banner Iron

(3). Machining and assembly - Carter Carburetor

(4). Welding - Nooter Corp. and St. Louis Ship

Each industrial visit was arranged to consist of a walk-through tour and a questions and answer time with company employees. Each firm cooperated in a slightly different manner. Because of the size of the group making the visit and the nature of the companies being toured, participants were usually divided into three groups.

Industrial tours began on the second day with a morning visit to Carter Carburetor. The in-plant tour was conducted by industrial engineers. The question and answer period was conducted by one person from personnel management and one from production management. There was opportunity for participants to question salaried employees during the tour, however, due to the fact that most production jobs were piece work (incentive) relatively few hourly employees were interviewed.

Nooter Corporation provided three tour guides from the ranks of management. Participants were allowed to interview selected hourly employees. The employees interviewed were selected as representatives of a particular occupation or craft. The question and answer period provided the participants the opportunity to question any of eleven management personnel, many of whom had formerly been hourly wage earners. The discussion panel consisted of production, training, and finance people ranking to vice president.

St. Louis Ship presented a different climate from that of the ordinary factory or production firm. The tour was conducted in the evening during the second shift. The setting for the tour was the out-of-doors shipyard. Tour guides were from the office of personnel and the shift foreman. Participants were allowed to speak with workers. The shift foreman provided valuable information concerning all occupations. Only

an informal, stand up, question and answer period was conducted at St. Louis Ship.

A contrasting atmosphere was encountered at Banner Iron Works, Green Foundry Division. Due to noise, heat, smoke, and dust, little interaction was possible with foundry workers. The personnel manager and a metallurgical intern acted as very knowledgeable tour guides. Questions were answered by the vice president in charge of production.

McDonnell's provided the setting for the sheet metal phase of the industry. A very complete presentation prior to the tour explained the classification of sheet metal workers, their responsibilities, salaries, benefits, etc. The extreme diversity of responsibility of the sheet metal worker in the aircraft industry was explained. Training programs and facilities were detailed as were specific skill requirements and union contracts.

Local 27 of the Boilermakers Union provided the participants with the labor viewpoint. The Boilermakers have closed shops in St. Louis Ship and Nooter Corporation. A two hour, informal question and answer session with the Union representative presented a much less militant view toward management than the news media. The visit to the Union was concluded with a tour of the union hall and the apprenticeship school facilities operated by the union.

After each industrial tour and the visit to the union hall, time was allotted for participants to record data. A wrap-up session was also scheduled to provide interchange of ideas and for project directors to gain feedback and suggestions from participants.

Worksheets were provided as guides for the recording of data. Participants were requested to submit completed data sheets for each occupation they had identified from the tours. Participants were encouraged

to work in small groups and thereby pool their information. Project personnel reproduced copies of completed data sheets for distribution to participants. Sixty-four different data sheets were distributed. (Appendix H). Duplication and similarity of occupational data was noted. However, participants desired separate data sheets for each occupation even though there were only minor differences.

McDonnell provided data sheets for sheet metal workers drawn from the union contract.

On the second day of the first week, Mr. Eugene Brightwell, Industrial Arts Supervisor for the State of Missouri, presented information detailing State Department plant to provide money for implementation of Occupationally Oriented Industrial Arts concepts and procedures in the secondary schools of the State. This announcement provided an extra spark of enthusiasm within each participant.

Mr. Dwight Hart, Director of CETA project for the Hazelwood School District discussed methods of introducing occupational information into existing courses. Relative success of various techniques were discussed and questions from participants were fielded.

In addition to tours and speakers, a film outlining the concept of career education and a filmstrip-tape series of the importance of career education to Missouri youth was presented as orientation materials. The film was secured from the Hazelwood School District and the filmstrip from the Career Education Resource Center in Jefferson City.

Mr. David Casson, Business Agent for Local 27 of the Boilermakers Union discussed the role of the union representatives during an orientation meeting. He also presented each participant with a ticket to the Monday night ball game at Busch Stadium.

The second week of the practicum was conducted on the Northeast Missouri State University campus in Kirksville. Proceedings began with an orientation session during which personages of the University administration welcomed the participants and mingled socially.

Work sessions began with discussion of the objectives of occupationally oriented industrial arts. Primary consideration was devoted to transforming the broad objectives as stated in Guidelines for Occupationally Oriented Industrial Arts Education Programs, into measurable behavioral objectives for classroom implementation. Following an instructional session, participants were divided into small groups for the purpose of developing their own classroom objectives.

Following objective development, efforts were concentrated on selecting appropriate types of student experiences to achieve the desired behaviors. Participants voiced difficulty in determining appropriate behavior and respective student experiences due to the intangibility of the concept "informed occupational choice." However, the majority of the participants were able to reconcile the difficulty when it was explained that attitudes, skills, and knowledge elements need to be attached one at a time.

Commercially prepared materials, both A-V and written were made available for inspection and participant evaluation of their applicability to individual industrial arts programs. Catalogs, brochures, and bibliographic lists were made available to participants, that they would have ready reference to informational and A-V sources.

Mr. Bob Robison, Director of Industrial Education and Dr. Frank Drake, Coordinator of Vocational Education for the State of Missouri, addressed the Practicum during the second week. Mr. Robison clarified procedures for writing proposals to obtain funds for OOAI programs.

Dr. Drake explained vocational education legislation which enabled vocational funds to be applied to industrial arts. Dr. Drake also explained in detail the organization of the State Department of Education.

The evening session on Wednesday was devoted to attending the Governor's Conference on Education which was held on the NMSU campus. All participants attended the vocational education special interest session. Discussion in the special interest session centered on recommendations for vocational education in the future.

Of particular interest to the Practicum participants were comments expressing a distinct dichotomy between the humanities and vocational education. Though exact records were not made of the proceedings and comments of participants after the Conference, there was general agreement among the participants that Occupationally Oriented Industrial Arts offers at least one avenue for bridging the gap in philosophies.

Sessions dealing with alternative education options, post occupationally-oriented industrial arts were held during the second week of the Practicum. Mr. Ralph Albin, Supervisor of Technical Education for the State Department of Education, discussed technical school opportunities on the post-secondary level. Mr. Herb McMahon, Industrial Engineering Department Head at Florissant Valley Community College discussed opportunities and educational programs available at Community and Junior colleges. Mr. Robison had previously discussed opportunities available through the Area Vocational-Technical School agreement.

Mr. Michael Holz, Counselor, North County Technical School in St. Louis County described useful counseling procedures and techniques.

He detailed specific individual traits and/or characteristics used in determining eligibility for acceptance into vocational-technical programs at North County Tech. He also differentiated between North County Tech (a three-year vocational-technical high school) and the Area Vocational-Technical School.

The proceedings of Thursday of the second week deviated from the written agenda. With the advent of Mr. Brightwell's announcement of available funds, for which proposals had to be submitted, came the demand from the participants to provide instruction in writing proposals. Therefore, the efforts of the project staff on Thursday were devoted to proposal writing techniques. General instruction on what to write, how to write it, and how to submit a proposal were provided in the large group sessions. Time was then allotted for individuals to work on their own ideas for their specific circumstances. A review and synthesis session was later conducted to answer questions, exchange comments and polish ideas. The result of this day was that each participant left the practicum with at least the rudiments of a proposal for submission to the State Department of Education for funding of an Occupational-Oriented Industrial Arts Program.

The final day of the Practicum was spent in collecting information, administering the post-test and in evaluation of the Practicum.

News release material was prepared and sent to Public Relations of the University for dissemination to hometown news media of the respective participants. Letters addressed to the proper school officials were drafted and mailed, informing them that individual participants had taken part in the Practicum. The letters also informed the intended

recipient of the knowledge and experience areas covered by the Practicum.

Certificates were prepared for the participants but failed to arrive in time for distribution on the final day. Therefore, they were mailed to the participants at a later date.

Pretest, Post-test Data

During the first orientation session, a pretest was administered to participants. It was explained that the pretest, post-test results were not to be used as evaluative material for individuals. However, it was explained that the cumulative results would be used as a method of describing the accomplishments of the Practicum. It was also explained that the same instrument would be used for both the pretest and post-test (See Appendix I).

The instrument was designed with two parts, each requiring a different response from the participants. The first part, consisting of ten items, listed objectives of industrial arts, vocational education and occupationally oriented industrial arts. The objectives of industrial arts and occupationally oriented industrial arts were taken from the publication Guidelines for Occupationally Oriented Industrial Arts Education Programs. The vocational objectives dealt with developing a salable skill, retraining, and upgrading of employed workers.

The participants were provided with a listing of objectives, which they were asked to label according to the educational program with which they should be associated. There were no restrictions placed on the number of programs which could be designated. Thus, multiple designations for any or all objectives were possible.

The frequency of responses are recorded in Table II

TABLE II

PRE - POST-TEST RESULTS

Objective Tests		Number of Responses by Category of Objectives							
		IA*	OOIA	VE	IA OOIA	OOIA VE	IA VE	IA OOIA VE	TOTAL
OBJECTIVE #1	Pretest	8	3	0	2	0	1	0	14
	Post-test	1	0	0	9	1	0	3	14
OBJECTIVE #2	Pretest	2	6	1	3	0	1	1	14
	Post-test	0	9	0	5	0	0	0	14
OBJECTIVE #3	Pretest	0	2	11	0	1	0	0	14
	Post-test	0	0	13	0	1	0	0	14
OBJECTIVE #4	Pretest	0	0	11	0	2	0	1	14
	Post-test	0	0	12	0	2	0	0	14
OBJECTIVE #5	Pretest	8	3	0	3	0	0	0	14
	Post-test	1	6	0	6	1	0	0	14
OBJECTIVE #6	Pretest	8	0	0	0	0	2	4	14
	Post-test	4	1	0	5	0	1	3	14
OBJECTIVE #7	Pretest	0	1	11	0	1	0	1	14
	Post-test	0	1	12	0	0	0	1	14
OBJECTIVE #8	Pretest	0	9	0	2	0	1	2	14
	Post-test	0	9	0	3	2	0	0	14
OBJECTIVE #9	Pretest	9	1	0	0	0	0	4	14
	Post-test	2	3	0	6	0	1	2	14
OBJECTIVE #10	Pretest	4	4	1	2	1	0	1	13
	Post-test	2	2	1	6	1	0	2	14

OBJECTIVES

1. Develop an insight and understanding of tools, machines, materials, processes and terminology as they relate to the production and servicing aspects of industry.
2. Acquire an awareness of the world of work, to explore varied occupations, and to become occupationally oriented.
3. Retrain persons for a different occupation.
4. Develop a salable skill in a specific occupation.
5. Interrelate the content of industrial arts with other school subjects in the curriculum.
6. Develop basic skills in the safe and proper use of industrial materials, tools, machines, and processes.
7. Upgrade persons within a specific occupation.
8. Develop an understanding of a variety of careers and their requirement.
9. Develop problem solving and creative abilities relating to the tools, machines,
10. Discover and develop abilities, aptitudes, and interests related to the technical pursuits and applied sciences.

* IA = Industrial Arts OOIA = Occupationally Oriented Industrial Arts
VE = Vocational Education

Objectives 1, 6, 9 and 10 represented the major objectives normally associated with traditional industrial arts. Objectives 2, 5, and 8 were designated as being of major emphasis in occupationally oriented industrial arts. (See Guidelines for Occupationally-Oriented Industrial Arts Education Programs, page 2.) Objectives 3, 4, and 7 were those thought to express the major purposes of vocational education.

Theoretically, all objectives except 3, 4, and 7 should be associated with both industrial arts and occupationally oriented industrial arts, as these programs should be synonomous. This inclusiveness was discussed but not emphasized during the practicum. Results of the pretest and post-test indicate that many of the participants viewed industrial arts and occupationally oriented industrial arts as separate entities. However, post-test responses generally cataloged the objectives into either the appropriate program category or into the category identifying both programs. There appeared to be little confusion concerning the objectives of vocational education.

Response emphasis for objective #1 shifted from industrial arts on the pretest to both industrial arts and occupationally oriented industrial arts on the post-test.

Objective #2, which contained the words "occupationally oriented" elicited the greatest number of responses on both tests for occupationally oriented industrial arts. There was an increase in responses in both the occupationally oriented industrial arts category and the combination classification industrial arts and occupationally oriented industrial arts.

Pretest responses to objective #3 identified the vocational education category as did post-test responses. However, on the post-test there were fewer responses in other categories. The same circumstances are true

for objective #4, although the number of responses in each category is slightly different.

Objective #5, which dealt with the interrelating of industrial arts content with other school subjects was initially viewed as being primarily an objective of industrial arts. Six respondents indicated they believed it to be either an objective of occupationally oriented industrial arts or an objective of both industrial arts and occupationally oriented industrial arts. Post-test results indicated a shift from industrial arts to occupationally oriented industrial arts with twelve responses including O.O.I.A. as the appropriate program. Six of the twelve indicated that it was an objective of both industrial arts and occupationally oriented industrial arts.

Pretest results for objective #6 indicated all participants believed that industrial arts has a responsibility to develop basic skills. Two participants responded that vocational education also had some responsibility. Four persons indicated that all three programs had responsibility in this area. Post practicum responses shifted toward occupationally oriented industrial arts. While only five responses were noted for both industrial arts and occupationally oriented industrial arts, only five participants disregarded occupationally oriented industrial arts as opposed to ten on the pretest.

The seventh objective was correctly perceived as being a vocational education objective on both tests.

The eighth objective was perceived as an occupationally oriented industrial arts objective by the same number of participants on both tests. Five participants indicated implications for industrial arts on the pretest but only three post-test responses included industrial arts in combination of programs.

Objective nine was characterized by a shift from strictly industrial arts to a combination of industrial arts and occupationally oriented industrial arts and occupationally oriented industrial arts alone.

The tenth objective pretest responses were categorized as four for industrial arts, four for occupationally oriented industrial arts, and two for the combination of the two. Post-test responses were two, two, and six respectively.

In general, vocational education objectives were perceived as vocational education objectives on both pretest and post-test. Industrial arts and occupationally oriented industrial arts objectives were viewed as associated with only industrial arts or occupationally oriented industrial arts. In only one instance did the majority of participants view the objective as being related to both occupationally oriented industrial arts and industrial arts in combination. There were four instances where industrial arts objectives were thought to be related to vocational education in addition to industrial arts and occupationally oriented industrial arts.

The second portion of the instrument was characterized by open ended items, requiring spontaneous individual responses. Items 11 through 19 were included in this portion.

Item 11 requested the respondents to list occupational attitudes which it would be possible to identify and nurture in occupationally oriented industrial arts. A total of twelve separate attitudes were identified on the pretest and nineteen on the post-test. Two attitudes identified on the pretest were not included on the list compiled from the post-test. Conversely, seven different attitudes were listed on the post-test which had not been mentioned on the pretest (See Table III).

TABLE III

ATTITUDES

PRETEST AND POST-TEST RESPONSE FREQUENCY
ITEM 11

RESPONSE	frequency Pretest	frequency Post-test
Appreciation of craftsmanship	2	6
Appreciation of tools, materials, and products	2	1
Appreciation for problems of employers	0	1
Appreciation for the need for career preparation	0	1
Attendance	0	8
Creative or innovative attitudes	2	0
Cooperativeness and respect for others	1	5
Dependability	1	2
Desire and willingness to do good work	2	9
Follow orders willfully	1	0
Integrity	0	1
Loyalty	1	1
Punctuality	1	2
Reliability	1	2
Safety	4	1
Willingness to respond to criticism and suggestion	0	1
Willingness to be responsible for one's own actions	0	4
Willingness to learn	0	1
Willingness to finish a job	1	1
TOTAL	19	47

An important measure of the effectiveness of the practicum was the increase in awareness level of the participants concerning the types of responses requested in items 11 through 18. This awareness level was manifest in the frequency of response by individuals to each item. The differences in the frequency of response per participant from pre-test to post-test illustrated an increased awareness for each item.

As stated previously, for item 11, twelve attitudes were listed one or more times on the pretest, for a total of ninetten responses, or a frequency ratio of 1.36 responses per participant. Forty seven post-test responses identified nineteen attitudes for a frequency ratio of 3.36

responses per person. Thus, participant awareness of appropriate attides was increased nearly threefold.

The responses to item 11 and a tabulation of the requency of responses were recorded in Table III.

The twelfth item of the pretest post-test instrument asked participants to identify occupational information categories which should be provided in occupationally oriented industrial arts. Table IV

TABLE IV

Categories of Occupational Information

PRETEST AND POST-TEST RESPONSE FREQUENCY
ITEM 12

RESPONSES	f pre	f post
Salary and benefits	3	13
Working conditions	2	13
Job outlook	3	5
Elementary skills	1	0
Advancement opportunity	1	3
Specific skills (special)	1	11
Basic processes	1	0
Advancement requirements	1	1
Level of work required	1	0
Physical abilities required	3	2
Mental abilities required	1	0
Lifestyle associated with job	1	1
Work opportunity in commuting area	1	1
Educational requirements	1	10
Duties		8
Occupational hazards		8
Employee traits and attitudes desired		6
Union or Organizations		12
Likes and dislikes		7
Special requirements		5
Job stability		6
Job responsibilities		5
Advantages and disadvantages		2
Educational advancement opportunity		1
Types of firms		1
Experience prerequisites		1
Safety regulations		1
TOTAL	20	123

illustrates the responses and their frequencies. The number of categories identified, increased from fourteen on the pretest to twenty-three on the post-test. The response frequency ratio increased from 1.43 to 8.64. Thus, a sixfold increase in participant awareness was evidenced. Seven post-test responses exhibited a frequency count of eight or more on the post-test, indicating a majority of the participants believed them to be important. No pretest response received a frequency count higher than three.

Item 13 solicited responses in the firm of occupations identified in four metalworking areas; sheetmetal, foundry, machining, and welding. These responses were recorded in Tables V through VIII respectively. The occupations listed were drawn from the past experiences and knowledge of the participants with each of the respective areas, without the benefit of external stimulus other than the identification of the areas. Thus, it may be noted that pretest responses were often more general and ambiguous than post-test responses. The relative specificity of the post-test responses was assumed to be a result of the exposure of the participants to the related industries.

It was noted that the participants were definitely not devoid of knowledge of occupations within each area. Many general areas of occupational endeavors were recorded on the pretest. It must be assumed that the post-test responses would have differed from those recorded had a different firm been selected for the industrial tour. For example, the firm selected to represent the sheetmetal area was McDonnel Douglas, an aircraft manufacturer. Post-test responses may have been considerably different had the industrial tour been conducted in a heating/air conditioning manufacturing firm.

TABLE V

Occupational Categories

PRETEST AND POST-TEST RESPONSES

ITEM #13A - SHEETMETAL

RESPONSES - PRETEST ONLY	RESPONSES - PRETEST & POST-TEST	RESPONSES - POST-TEST ONLY
Body and fender	Sheetmetal fabrication	Fastening
Roofer	Layout man	Cutting material
Building prefab	Shear operator	Quality control
Machine operator	Brake operator	Riveter
Seaman	Heating and Air conditioning	Material handler
Spotwelder	Management	Assembler
Former	Draftsman	Teacher
Gutter hanger	Installer	Finisher
Siding and roofing	Design	Maintenance
Duct builder	Patternmaking	Safety personnel
Aircraft		Engineer
Rolling mill operator		Welder
Mill set up		Carpenter
Press operator		Lab man
Electricity		Fitters
Construction		Union representative
Sales		Crane operators
Dust collecting systems		Fork lift operator
Automotive		Tool room operator
Appliance		Laborer

TABLE VI

Occupational Categories

PRETEST AND POST-TEST RESPONSES

ITEM #13B - FOUNDRY

RESPONSES - PRETEST ONLY	RESPONSES - PRETEST AND POST-TEST	RESPONSES - POST-TEST ONLY
Automaker	Coremaker	Safety man
Steel plant	Moldmaker	Grinder
Design	Metal pourer	Muller
Foundryman	Shakeout	Carpenter
Metallurgist	Laborer	Maintenance
Cleanup-finish	Patternmaker	Rammer
Sand blaster	Electricity	Inspector
Mill operator	Furnace operator	Welder
Polisher	Draftsman	Estimator
	Machine operator	Fitter
	Management	Forklift operator
		Union representative
		Charger
		Inspector
		Finisher
		Material handler
		Debur
		Molder's helper

TABLE VII

Occupational Categories

PRETEST AND POST-TEST RESPONSES

ITEM #13C - Machining

RESPONSES - PRETEST ONLY	RESPONSES - PRETEST & POST-TEST	RESPONSES - POST-TEST ONLY
Management	Machine operator	Degreaser
Laborer	Machine hand	Thermal debur
	Quality control	Truck and crane operator
	Setup man	Assembler
	Tool & Die maker	Safety
	Maintenance man	Fitter
	Drafting and layout	Welder and helper
	Mechanic	Union representative
		Researcher
		Lead man
		Jig and fixture
		Apprentice

TABLE VIII

Occupational Categories

PRETEST AND POST-TEST RESPONSES

ITEM #13D - WELDING

RESPONSES - PRETEST ONLY	RESPONSES - PRETEST & POST-TEST	RESPONSES - POST-TEST ONLY
Auto plant	Boilermaker	Helper
Home repair	Arc welder	Tacker
Plumbing	Gas welder	Mechanic
Steel worker	Mig & Tig operator	Grinder
Construction	Drafting & layout	Safety
Aircraft	Setup man	Torchman
Farmer	Production control	Fabricator
Manufacturing	Forklift and crane operator	Assembler
Sales	Spot welder	Inspector
Maintenance	Management	Engineer
Forger	Fitter	Laser welder
Pipeline welder	Welder	Machinist
Resistance arc	Blacksmith	Union representative

Responses found in Tables V through VIII were recorded as written on the test instrument. Individual style in responding to Item 13 created categories which appear to refer to an operation rather than a specific occupational classification. This may have been due to inability to recall specific job titles.

As may be seen, the responses were recorded in three columns within the tables. Responses found only on the pretest were recorded in the left column. Responses found only on the post-test were recorded in the right column. All listings in the center column were found among both the pretest and post-test.

Practicum participants were asked to list techniques of presenting occupational material they felt to be applicable to occupationally

TABLE IX

PRETEST AND POST-TEST RESPONSE FREQUENCY
Item 14

Techniques to present information about World of Work

RESPONSES	f pre	f post
Individual study	1	
Class discussion and lecture	4	
Speakers	7	10
Reading assignments	3	6
Tours - field trips	7	12
Films, slides and tapes (AV)	7	9
Workshops	1	1
Research projects	1	2
Job exploratory experiences	1	7
Guidance personnel (vocational)		4
DOT research		4
Career days		2
Investigation of needs of business		1
Interviews with workers		3
Investigation of further education		1
Role playing		2
Peer group conferences		1
Displays		2
Visit alternative training possibilities		1
TOTAL	32	68

oriented industrial arts. Responses were recorded in Table IX. Post-test responses were more numerous and varied than pretest responses, indicating greater breadth of awareness in the uniqueness of some types of information. Methods listed most frequently were tours and field trips, speakers, films and other audio-visual materials, reading assignments, and job exploratory experiences.

TABLE X

Student Activities

PRETEST AND POST-TEST RESPONSE FREQUENCY
ITEM 15

Activities in which students should participate

RESPONSES	f pre	f post
Exploratory experiences in shop	6	10
Study job requirements.	1	
Class discussion.	2	1
Tours - field trips	8	11
Build projects.	1	
Speakers.	1	7
A-V materials	2	6
Interview workers	2	7
Coop Ed	1	2
Out of class experiences.	1	
OJT	1	1
Reading occupationally oriented materials	1	6
Hobby activities related to occupation.	1	
Corporate structure and manufacture a product	2	
Investigate occupations		6
Conferences with vocational counselors.		3
Summer employment		2
Career days		1
Tour training facilities.		1
Role playing and simulation		3
Peer group discussion		1
Report writing.		1
Shadowing		1
TOTAL	30	70

Tabulation of the responses to item 15 were recorded in Table X. Participants were asked to identify activities they believed would be beneficial to students if the students participated. Activities receiving the most responses were: tours and field trips, exploratory shop experiences, interviewing workers, guest speakers, using audio-visual materials, reading occupationally oriented materials, and investigation of occupations.

Participants were asked to record experiences students should have in occupationally oriented industrial arts. The responses given most frequently were: doing work related skills with tools, materials, and

TABLE XI

Student Experiences

PRETEST AND POST-TEST RESPONSE FREQUENCY
ITEM 16

Experiences for students to have

RESPONSES	f pre	f post
Part time job	1	
Simulated job experience and role playing	2	4
Do work related skills with tools, materials and processes	5	10
Explore areas of Industrial Arts	1	1
Participate in field trips	2	7
View films and audio visual materials	1	4
Hear speakers	2	4
Talk with employers		1
Talk with employees		2
Class assignments		3
Talk with vocational counselors		2
Participate in peer discussions		2
OJT		1
Individual study		2
Cooperative education		1
Apprenticeship		1
Become aware of various occupations (educational requirements, wages, working conditions, etc.)		1
TOTAL	14	46

processes, and participating in field trips. The complete listing of responses are recorded in Table IX.

Investigation of Tables IX, X and XI revealed a marked continuity among the items listed. For example, tour and/or field trips and exploratory shop experiences were noted to be of the most often noted responses in all three tables. This continuity was interpreted as evidence that the participants placed high regard on these techniques and experiences for teaching occupationally oriented industrial arts. Similar interpretations were possible for other responses.

Item #17 requested a listing of alternative methods of preparing for employment after completion of an occupationally oriented industrial arts program. The responses were recorded in Table XII. The

TABLE XII

PRETEST AND POST-TEST RESPONSE FREQUENCY
ITEM 17

Training alternatives after Industrial Arts

RESPONSES	f pre	f post
Secondary Vo-Tech School	5	13
Junior or community college	3	11
Advanced Industrial Arts courses	1	
University or college	2	12
Apprenticeship	3	10
Related education	1	
1 and 2 year college program	1	
OJT		11
Post secondary Vo-Tech		2
Trade school (private)		9
Armed Forces		8
Union Training		1
TOTAL	16	77

majority of post practicum participants were aware of, and listed seven alternatives. Secondary vocational technical schools was the most frequently listed alternative on the pretest but it was listed by only five participants. Thus, it has been assumed that post-practicum participants were more knowledgeable of training and pre-employment alternatives than they were prior to the practicum.

Participants were asked to list the criteria for funding of occupationally oriented industrial arts. Pretest and post-test responses were recorded in Table XIII. The criteria for funding stated in federal enabling legislation included providing occupational information and providing occupational guidance. These two items were included in the three most frequently listed responses of the post-test.

TABLE XIII

PRETEST AND POST-TEST RESPONSE FREQUENCY
ITEM 18

List Criteria for Vocational funding of industrial arts

RESPONSES	f pre	f post
In-service teacher training	1	
Teach occupational information	1	7
Must be occupationally oriented	2	
Local need	2	
Available industry	1	
Prepare for entry level employment	1	
Matching funds	1	
Acquire awareness of World of Work		1
Develop understanding of a variety of careers		1
Interrelate content of Industrial Arts with other curricula		1
Occupational Guidance		6
Assist in making meaningful occupational choices		3
Develop awareness of educational alternatives for careers		4
Present Occupational Orientation to World of Work		2
Prepare students for voc-tech programs		7
TOTAL	9	32

53

Occupational information was mentioned only once on the pretest. Occupational guidance was not listed on the pretest. Other post-test responses could be interpreted to include one or both of the aforementioned criteria.

Item #19 requested participants to list unique responsibilities of an occupationally oriented industrial arts teacher. The nature of the responses made it unfeasible to construct a table for easy reference. Therefore, each response was quoted verbatim and recorded below.

Pretest Responses

"Prepare students to make wise decisions concerning an occupation."

"To make students aware of job related skills, skills related to educational levels, future of jobs sought and possible advancement in his related field of skill."

"Aid the student in achieving job related information to get a better job. Self-satisfaction in the World of Work."

"To make the students aware and given an understanding."

"Preparing a student for various occupations in a cluster such as metalworking, instead of just one."

"Helping students to explore careers that they may be interested in pursuing."

"Helping a student to explore the career opportunities and decide which is best for him. Providing a chance for him to develop some elementary skills in that area."

"Knowledge of the working world. Some industrial experience."

"Be up-to-date on industry and occupational training needed."

"To be able to relate directly to industry and industrial processes."

Post-Test Responses

"Provide occupational information and instruction - training - conditions - wages. Provide exploratory experiences in shops and lab observation of business and industry."

"The only instruction in general education able to impart to his students an insight into industrial occupations enabling the student to make a choice of careers."

"To prepare a student in the totality of work one does for his or her lifetime."

"The Industrial Arts teacher has the unique responsibilities to carry out those listed above in 18 and they are unique in that Industrial Arts teachers have the best opportunity to carry them out."

"He must provide experiences and information to assist student in making intelligent decisions concerning careers and training alternatives."

"To give a student knowledge, that might last them for the rest of their life, that is meaningful to their happiness and successfulness."

"Prepare the youth of today with the "Real World of Work Ideas & Responsibilities," for their further related work situations and values."

"To be able to acquaint the student with the World of Work as a general experience by doing."

"Assist students in making of informed and meaningful occupational choices. Prepare students for enrollment in advanced or highly skilled vocational and technical education programs."

"Instead of "telling" a student about the various occupations related to his field, the students are able to actually experience their different occupations through hands-on experiences, field trips, guest speakers."

"Letting students know about the world of work, and what their future might be."

"To help student develop an interest in working to get a view of the real world of work. To help identify the good and the bad of various occupations. Industrial Arts is an internal part of the students total growing up process. It is the only "real life" experience he may have while in school."

"The student will be better prepared for his field of employment or in making a better choice of a career."

"To give the student a broad exploratory experience into the world of work, different occupations and working conditions, entry level skills, salary benefits, union requirements so the student can choose his own direction into vocational technical programs or directly into the work force or post secondary programs."

The final activity of the Practicum was the completion of the evaluation of the Practicum. This evaluation was designed to allow participants to react to the activities and instruction provided but yet remain anonymous.

Five areas of concern were evaluated by the participants. The first category to be evaluated was that of tours. All tours received good evaluations. However, the tours receiving the highest evaluations were those in which the participants were allowed to actually question workers on a personal basis at their work stations. Those tours in which participants were restricted in their communication to only management or supervisory personnel received the lowest ratings.

Information gained from speakers was given an eight rating on a ten point scale. Individual speakers were not evaluated.

The third category of evaluation was related to development of materials. This category contained four subcategories. They were: behavioral objectives, OOIA content guides, proposal, and prepared materials. Each subcategory received a rating of 8.5 or above. Only the subcategory titled OOAI content guides received a rating of 9.0.

The participants were asked to evaluate the media with respect to its appropriateness to occupationally oriented industrial arts. The media was rated at 8.3 on the ten point scale.

The fifth category for participant evaluation was personnel in which they were asked to rate effectiveness, atmosphere created by, knowledge of subject, ability to communicate ideas, and adapted to the needs of the participants. The ratings received were 9.1, 9.4, 9.0, 9.2, and 9.0 respectively.

In addition, participants were encouraged to write a statement concerning their evaluation of the Practicum. The statements or characteristic excerpts therefrom were recorded below.

"Very good. Would like to see it expanded to cover a whole department. . . or possibly schoolwide. . ."

"The tours were of great value. The personnel did a fine job of getting materials to us. The purpose was clear at all times."

"Very good."

"Very informational into the inside of the industries, was well layed out, showed time and effort had been put into the practicum, and overall went very smooth."

". . . I feel I did gain information and a much different approach."

". . . the first week was quite good and enjoyed the tours and information. Second week was not as the first. Sitting in a room from 8:00 in the morning until 8:00 or 9:00 at night can be a pain . . ."

"The course was very enlightening and very much needed in this area. Would like to see more done in this subject in other areas of industrial arts."

"I feel I have learned more in the two weeks in practicum than I would have believed possible. . . I feel well qualified to conduct a program in OOIA and regardless if the program is funded or not, I will be using the information and materials I have acquired."

"The first week was excellent. The second week had some slow spots. . . The long hours were tiring physically to me, but in general I think it was a worthwhile program."

"I feel that this workshop was excellent. It provided me with insight into OOIA that I was not aware of. Even though occupations were mentioned in class, I am certainly going to put a higher priority on this program in the classroom."

"Excellent content. . . Tours of great value. . . Know from small group discussions that NMSU and Practical Arts personnel were well received and found to be more than expected. . . "

"This practicum has been most helpful in gaining insights into OOIA. The tours were the best I have ever gone on. The atmosphere created by the group, the instructors, and the guest speakers were the finest. I will highly recommend this activity and any others like it from this institution."

"I felt this was the best practicum I ever had. . . the type of program we have always needed. . . was well pleased."

"I have enjoyed and gained through this workshop. I am sure I will be more occupationally oriented in my teaching."

SECTION FOUR

CONCLUSIONS AND RECOMMENDATIONS

Summary

The primary purpose of the Occupationally Oriented Industrial Arts Practicum as stated in the previous sections was to provide the industrial arts teachers with those experiences and opportunities needed to help them plan, develop, and introduce occupationally-oriented information, activities and experiences into industrial arts classes. Evidence of the achievement of this purpose is provided by gains reported from pretest and post-test evaluations. Evaluative comments by participants supported the pretest and post-test evaluations.

Conclusions

Based on the findings of this project, the following conclusions are made:

1. The industrial tours were the highlight of the practicum both in terms of interest getting ability and information gained. Prior to the industrial tours, the attention of the participants was directed toward gaining insight into the worker and his job instead of toward the processes and products of the industry. Consequently, the tours receiving the most favorable comments from participants were those in which personal interaction with workers was possible. Participants, when allowed to do so, spent considerable time questioning workers concerning aspects of their occupations. Fewer questions were forthcoming in instances where administrative personnel were assigned to answer occupational questions. Also, the participants tended to discount the answers provided by administrative personnel, regardless of their qualifications, because they felt they were hearing what the company wished them to hear rather than the true ideas, feelings and biases of the workers.

2. Project personnel determined it was important to make participants aware of the shift in emphasis from traditional industrial arts to occupationally oriented industrial arts. It was felt that many industrial arts teachers have been serving some of the purposes of occupationally oriented industrial arts but were perhaps unaware what these purposes were. Therefore, attempts were made during the practicum to make participants aware of the specific objectives associated with occupationally oriented industrial arts. Post-test results indicated that advancements were made in this area but complete understanding and knowledge were apparently not totally achieved.

3. Teacher awareness was considered to be the initial element necessary for implementation of occupationally oriented industrial arts. Areas in which an increase in awareness was desired were: occupational attitudes, occupational information, occupational classification, techniques for teaching occupational information, appropriate student activities, student experiences, educational alternatives, criteria for O.O.I.A. funding, and unique responsibilities of the O.O.I.A. teacher. In each category, improvement in participant awareness was evident.

   More improvement may have occurred in the area of job classification had greater emphasis been placed on specific job titles. However, close examination of post-test responses indicate that general interpretation of occupations are listed, even though specific job titles were not listed.

4. Practicum personnel predetermined a need to provide instruction in preparing occupationally oriented material for classroom use. Instruction in preparing measurable objectives and stating educational intents in behavioral terms was not enthusiastically received. All participants were experienced teachers with only two having two years or less of experience. Therefore, this activity was viewed as relatively unproductive time.

   Much greater enthusiasm was exhibited for small group work sessions in which participants worked together to prepare individual lesson activities and supplementary material using the format of the State Curriculum Guide in Metals.

   Equal interest was exhibited in individual efforts to develop proposals for grants in O.O.I.A. This activity was continued from the practicum into the free time aloted to the participants.

   In general, participants were highly motivated to work in small groups or individually to complete materials to take home. Little interest was shown for large group instructional type activities except where it was felt to be an individual need of the participant.

5. Four days of touring various aspects of industry appeared to be adequate for the purposes of the practicum. Project personnel believe additional tours would have dinimished the impact of the first week's activities. Mental and physical fatigue were apparent. Fatigue also became apparent earlier in the second week. Participant reaction indicated the change in pace from constant touring (first week) to classroom inactivity (second week) was anticlimactic.

6. It is the belief of the project staff that a greater understanding of the role of industrial arts in providing occupational information and guidance has been a result of this practicum. Increased knowledge and awareness of the participants will undoubtedly assist many youth in making wise and meaningful vocational choices, thus improving the quality of their lives by increasing the benefit and effectiveness of the vocational education programs, or alternative avenues to employment they choose.

Recommendations

Based on the findings of the content survey, the practicum, pre- and post-test results and the interaction with the participants and representatives of the metals industry, the following recommendations are made:

1. Future projects of this nature should concentrate heavily on industrial tours and emphasize the need for personal contact with the workers. Tour guides for the host industry must be prepared and willing to allow lengthy conversations during the tour. Project personnel for this practicum had secured commitment to this freedom from administrative personnel of each industry prior to the practicum. However, this information was not always communicated to tour guides.

   Industries selected for tours should be carefully screened in order that each tour may provide as wide a spectrum of the occupational area as possible. Industries should also be considered with respect to their products, as the type of product may determine job classifications and skill areas. If possible, extreme differences should be used as criteria for industry selection. Such factors as comfort level of workers, indoor and outdoor working conditions, day and night shifts, and occupational hazards should be considered.

2. It is recommended that considerable emphasis be provided concerning the role of occupationally oriented industrial arts in the education of youth.

3. Future efforts of similar practicums and existing industrial arts teachers education programs should direct attention to specific job titles.

4. A minimum amount of time should be spent utilizing formal instructional techniques in future practicums developed for experienced teachers.

   Emphasis should be placed on group and/or individual developmental activities. This would allow the experienced teacher to more easily adapt new information to his specific instructional planning techniques. Cooperative efforts by individuals and small groups enhance interaction and exchange of ideas while allowing the participants to meet their individual needs.

5. It is the belief of the project personnel that similar projects should be undertaken in all phases of industrial arts instruction.

Project Staff

Project Director

Dr. Peter J. Sireno, Director (Vocationally Certified)
Career and Vocational Programs
Northeast Missouri State University

Education

University of Missouri: 1973 - Doctorate of Education - Vocational (Vocationally Certified)
Northeast Missouri State University: 1964, 1966, 1967 - B.S., B.S.E., M.A.

Research and Developmental Projects

1973-1973 Coordinator - Missouri R.C.U. Project 1047 - "The Effects of a Performance Oriented Institute on the Local Vocational Education Director in Missouri."

1975 Project Director (E.P.D.A. Grant) "In-Service Practicum for the Vocational Home Economics Teacher."

1975 Project Director (E.P.D.A. Grant) "In-Service Practicum for the Vocational Electronics Teachers in Missouri,"

1976 Project Director (E.P.D.A. Grant) "An In-Service Practicum in Emphasizine Computer Graphic Applications for the Vocational Drafting Teacher."

1976-present (RCU Grant) "Competency Identification for Mid-Management Personnel - An Aid to Program Evaluation and Individualized Instruction."

Teaching Experience

1973-present Northeast Missouri State University, Kirksville, Missouri.

1972 - University of Missouri, Columbia, MO

1967-1971 - Missouri Western College - St. Joseph, Missouri

Project Co-Director

Dr. Leon G. Devlin
Professor of Industrial Education (Vocationally Certified)
Practical Arts Division
Northeast Missouri State University

Education

Texas A & M University, Ed.D. Industrial Education - 1971
Murray State University, M.S. Industrial Education - 1968
Murray State University, B.S. Industrial Arts - 1967

Research

1967-1968 Research Assistant; identification of technical competencies for development of technical education programs in kentucky.

1971 - Principal investigator: An Analysis and Evaluation of the Doctoral Degree Program in Industrial Education at Texas A & M University.

Teaching Experience

1968 - 1971 Texas A & M University

1971 - present Northeast Missouri State University

Co-Director

Dr. Robert L. Stephens
Assoc. Professor of Industrial Education (Vocationally Certified)
Supervisor of Student Teachers
Practical Arts Division
Northeast Missouri State University

Education

Blockton High School, Blockton, Iowa - 1954
Iowa State University, B.S. - 1961
Nebraska State Teachers College, Wayne Nebraska, M.S. - 1964
Iowa State University, Ph.D. - 1969

Research

Doctoral Dissertation: Major Household Appliance Services Technical Training Needs of Iowa

Student Oriented Industrial Firm - 1973 (RCU)

Multi-Area Curriculum Study in Industrial Education 1974-75 (Institutional Research Grant).

Teaching Experience

1961-1967 Riverside High School, Sioux City, Iowa Industrial Arts and Mathematics.

1967-1968 Iowa State University, Graduate Assistant. University Safety Council.

1968-1969 Iowa State University, Instructor, Industrial Education.

1969-1971 Iowa State University, Assistant Professor, Industrial Education.

1971-present Northeast Missouri State University, Associate Professor, Industrial Education.

APPENDIX A

(Participants)

PRACTICUM PARTICIPANTS

Name	Home Address & Telephone Number	School Address & Telephone Number
Bradshaw, Don	RFD #1 Box 42 B Warrenton, MO 456-8224	Warrenton High School Warrenton, MO 456-4311
Bryan, William R.	5390 Cherryview Lane St. Louis, MO 63128 892-3906	Hazelwood East 15955 New Halls Ferry Rd. Florissant, MO 63031
Combs, Jerry D.	Box 675-2 RFD #3 Ozark, MO 65721 485-7213	Ozark High School Ozark, MO 485-7521
Gorski, David D.	411 Cadillac St. Charles, MO 63301 314-925-8429	Pattonville Sr. High 2497 Creve Couer Mill Rd. 739-5000-323
Hancock. Lloyd F.	9831 E. 68th Terrace Raytown, MO 64133 358-8429	400 E. Blue Parkway Lee's Summit, MO 64063 524-3369
Lake, Lawrence A.	150 Bevans Dr. Hillcrest Hts. Elsberry, MO 63343 314-898-5668	4th & Bailey St. Elsberry, MO 63343 314-898-5552
Lentz, Jeffrey A.	8631 Euclid Kansas City, MO 64132 444-5074	9010 Old Santa Fe Kansas City, MO 64138 763-6374
Marcott, Charles	408 Hutchinson Rolla, MO 65401 364-5794	Rolla Sr. High East Tenth Rolla, MO 65401 364-4984
Marquardt, Jim	223 West Lafayette Palmyra, MO 63461 314-769-4465	Palmyra High School S. Main Palmyra, MO 63461 314-769-2123
Miller, Edward B.	RFD #2 Pierce City, MO 65723 472-3718	East Newton R-6 Granby, MO 64844 472-6238
Mumford, Rich	900 S. Grand Eldorado Springs, MO 64744 876-5542	Eldorado Springs Box 121 H.S. Eldorado Springs, MO 64744

Nelson, Herschel L.	Graham, MO 64455 816-939-2475	South Munn, Maryville H.S. Maryville, MO 64468 582-2173
Norris, Vernon	RFD #3 Hale, MO 636-5166	Braymer C-4 Braymer, MO 64624 645-2284
Van Der Kamp, Ralph	1212 S. Jefferson St. Washington, MO 63090 314-239-3709	Washington Sr. High 11th & Sunnyside Washington, MO 63090 314-239-4717

APPENDIX B

(Agenda)

E.P.D.A. PRACTICUM

AGENDA

(For the week of June 14, 1976)

ASSISTING INDUSTRIAL ARTS TEACHERS
IN INTEGRATING OCCUPATIONALLY ORIENTED
ACTIVITIES INTO THEIR EXISTING
INSTRUCTIONAL PROGRAM.

NORTHEAST MISSOURI STATE UNIVERSITY

Kirksville, Missouri 63501

Monday A.M.

Activity #3 - Registration of Participants. 10:30.

3-1. Supply participants with name tags, note pads, writing instruments and other supplies.
3-2. Assign participants to motel rooms and acquaint them with location of General Assembly room.
3-3. Complete and collect University enrollment forms.
3-4. Handout schedule of events for first week of Practicum.

Activity #4 - General Assembly.

4-1. Assemble participants and project personnel in one location for introduction to practicum procedures and personnel.
4-2. Make participants aware of procedures to be followed during practicum,
4-3. Make participants aware of the division of responsibilities between project staff and participants.
4-4. Introduce Project Participants with explanation of the position held by each.

Activity #5 - Administer Pre-Test.

5-1. Present objectives of Pre-Test.
5-2. Present instruction on taking Pre-Test.
5-3. Present Pre-Test.
5-4. Discuss the Pre-Test.

Activity #6 - Lunch 12:00.

6-1 Satisfy hunger.
6-2 Mix socially with participants.

Activity #7 - Explanation of Objectives and Film. 1:00.

7-1. Explain objectives of Practicum.
7-2. Explain the film to be presented.
7-3. Show film on Career Education.
7-4. Discuss film and the application of career education concepts to Industrial Arts.
7-5. Explain concept of Occupationally Oriented Industrial Arts.
7-6. Present written materials concerning Career Education and Occupationally Oriented Industrial Arts.
7-7. Discuss the objectives of Occupationally Oriented Industrial Arts.

Activity #8 - 2:00.

8-1. Discuss previous implementation by participants of Occupationally Oriented Industrial Arts objectives.
8-2. Record past implementation procedures and relative frequency of such implementation.

Activity #9 - Outline Activities for Day #2. 3:00.

9-1. Conduct preview discussion of the activities for Day #2.
9-2. Prepare participants for the type of in-plant experiences they will receive.
9-3. Prepare participants for recording essential elements of in-plant experience for later use in developing occupationally oriented lessons and/or classes.

Activity #10 - Evening Meal. 5:00.

Activity #11 - Baseball game (optional).

Tuesday A.M.

Activity #12 - In-plant industrial tour number one. (Carter Carburetor - Mr. Neal Losse).

12-1. Travel. 7:30.
12-2. Observation of industry to identify different metalworking occupations. 8:30.
12-3. Observe and record - for each occupation.
a. characteristic activities performed by worker.
b. specialized activities performed by workers.
c. conditions of work.
d. special skill requirements.
e. physical needs and/or limitations of workers.
f. hazards of occupation.
g. benefits of occupation.
h. relationship of occupation to other occupations.
i. salary and benefits.
j. worker organizations.
k. relative stability of occupation.
l. relative supply of workers within occupation.
m. educational requirements.
m. educational opportunities.
o. opportunity for advancement.
p. worker likes and dislikes concerning occupations.
12-4. Discussion with industrial workers.
12-5. Discussion with management representative.
12-6. Discussion with labor representative.

Activity #13 - Speaker H.E.W. 3:00 p.m.

13-1. Present H.E.W. viewpoint on Occupationally Oriented Education.
13-2. Answer questions concerning the stand of the Federal government on funding of Occupationally Oriented Education.
13-3. Answer questions concerning the Federal viewpoint on the relationship of Occupationally Oriented Industrial Arts to Vocational Education.

Activity #14 - Evening meal. 5:00.

Activity #15 - Study session. 6:00 p.m.

15-1. Read prepared materials.

Activity #16 - Speaker - State Department of Education. 7:00 p.m. Mr. Gene Brightwell.

16-1. Explain the stand of the State Department of Education on Occupationally Oriented Industrial Arts.
16-2. Present State Vocational Education Plan and explain its relationship to funding possibilities for Occupationally Oriented Industrial Arts.
16-3. Present an appraisal of the possibilities of securing Vocational Education monies to partially support Occupationally Oriented Industrial Arts.

Activity #17 - General Assembly.

17-1. Review and Synthesis of Day's Activities. 8:00 p.m.
17-2. Conduct preview discussion of activities for Day #3.

Wednesday A.M. (Day 3).

Activity #18 - In-plant industrial tour number two. (Nooter Corporation - Mr. John Miller and Mrs. Robert Tedesco).

18-1. Travel. 7:30.
18-2. Observation of industry to identify different metalworking occupations. 8:30.
18-3. Observe and record - for each occupation.
a. characteristic activities performed by worker.
b. specialized activities performed by worker.
c. conditions of work.
d. special skill requirements.
e. physical needs and/or limitations of workers.
f. hazards of occupation.
g. benefits of occupation.
h. relationship of occupation to other occupations.
i. salary and benefits.
j. worker organizations.
k. relative stability of occupation.
l. relative supply of workers within occupation.
m. educational requirements.
n. educational opportunities.
o. opportunity for advancement.
p. worker likes and dislikes concerning occupations.
18-4. Discussion with industrial workers.
18-5. Discussion with management representative.
18-6. Discussion with labor representative.

Activity #19 - CETA Project. 3:00

19-1. Presentation. (Mr. Dwight Hart - Hazelwood School District).
19-2. Question-answer-discussion period.
19-3. Review and Synthesis of previous Day's Activities.

Activity #20 - Evening meal. 5:00 p.m.

Thursday A.M. (Day 4) 9:00 a.m.

Activity #21 - General Assembly.

21-1. Conduct preview discussion of activities for Day 4. 9 a.m.
21-2. Study session.
21-3. Read prepared materials.
21-4. Lunch

Thursday P.M.

Activity #22 - In-plant industrial tour number three. (Banner Iron Works - Green Foundry Division - Mr. Bruce Buehig -- must wear old clothes).

22-1. Travel. 12:30
22-2. Observation of industry to identify different metalworking occupations. 1:00 p.m.
22-3. Observe and record - for each occupation.
  a. characteristic activities performed by worker.
  b. specialized activities performed by worker.
  c. conditions of work.
  d. special skill requirements.
  e. physical needs and/or limitations of workers.
  f. hazards of occupation.
  g. benefits of occupation.
  h. relationship of occupation to other occupations.
  i. salary and benefits.
  j. worker organizations.
  k. relative stability of occupation.
  l. relative supply of workers within occupation.
  m. educational requirements.
  n. educational opportunities.
  o. opportunity for advancement.
  p. worker likes and dislikes concerning occupations.
22-4. Discussion with industrial workers.
22-5. Discussion with management representative.
22-6. Discussion with labor representative.

Activity #23 - General Assembly.

23-1. Review and Synthesis of Day's Activities.
23-2. Conduct preview discussion of activities for Day 5.

Activity #24 - Evening Meal.

Activity #25 - Study session.

25-1. Read prepared materials.

Friday A.M.

Activity #26 - In-plant industrial tour number four.

26-1. Travel. 7:30 a.m.
26-2. Observation of industry to identify different metalworking occupations. 8:30.
26-3. Observe and record - for each occupation.
  a. characteristic activities performed by worker.
  b. specialized activities performed by worker.
  c. conditions of work.
  d. special skill requirements.
  e. physical needs and/or limitations of workers.
  f. hazards of occupation.
  g. benefits of occupation.
  h. relationship of occupation to other occupations.
  i. salary and benefits.
  j. worker organizations.

k. relative stability of occupation.
l. relative supply of workers within occupation.
m. educational requirements.
n. educational opportunities.
o. opportunity for advancement.
p. worker likes and dislikes concerning occupations.

26-4. Discussion with industrial workers.
26-5. Discussion with management representative.
26-6. Discussion with labor representative.

Activity #27 - General Assembly. 1:00 p.m.

27-1. Review and synthesis of days activities.
27-2. Preview activities of Week #2.
27-3. Provide directions for accommodations for Week #2.
27-4. Provide instructions for preparation for Week #2.
27-5. Dismissal for weekend.

E.P.D.A. PRACTICUM

AGENDA

(For the week of June 21, 1976)

ASSISTING INDUSTRIAL ARTS TEACHERS
IN INTEGRATING OCCUPATIONALLY ORIENTED
ACTIVITIES INTO THEIR EXISTING
INSTRUCTIONAL PROGRAM.

NORTHEAST MISSOURI STATE UNIVERSITY

Kirksville, Missouri 63501

Week #2 - Objectives

Monday A.M.

Activity #1 - General Assembly. Student Union Alumni Room at 10:00. (Sireno)

1-1. Handout materials for week #2.

Activity #2 - Welcome and Orientation. 10:45. (Sireno)

2-1. Welcome participants to campus, provide them with lodging and boarding information.
2-2. Tour appropriate facilities of the University

Activity #3 - Development of Occupationally Oriented Industrial Arts Objectives. 11:30. Industrial Education Building 223. (Stephens)

3-1. Study existing behavioral objectives for Occupationally Oriented Industrial Arts.

Monday P.M.

3-2. 1:00 - Review procedures for developing teacher made behavioral objectives.
3-3. Discuss the types of objectives needed in the classroom for Occupationally Oriented Industrial Arts.
3-4. Write representative Occupationally Oriented Industrial Arts behavioral objectives.
3-5. Conduct discussion groups on the relative value of the representative objectives previously developed.

Activity #4 - H.E.W. and its view of Occupationally Oriented Industrial Arts. 3:00. (Drake)

Activity #5 - Establish technique to evaluate objectives. Industrial Education Building 223. 7:00.

5-1. Small group discussions. Discuss the ultimate purpose of Occupationally Oriented Industrial Arts in assisting students to make informed decisions in career selection and/or rejection, in light of existing occupational, opportunity for vocational education participation, alternative educational possibilities and job requirements and/or opportunities.
5-2. Discuss types of student experiences suited to the achievement of Occupationally Oriented Industrial Arts Objectives.
5-3. Small group discussions. 8:00. Discuss evaluation techniques for ascertaining achievement of objectives.
  5-3-1. Define positive objective attainment.
  5-3-2. Define attainment in light of individual students and their involvement.
  5-3-3. Identify different ways that attainment of objectives might be manifest.
5-4. Identify methods of determining success in teaching for objective attainment.
5-5. Identify and discuss techniques for recording success of objectives.

Tuesday

Activity #6 - Identification of information relevant to classroom study from Week #1. Industrial Education Building 223. 8:00. Group discussions.

6-1. List occupations and metalworking fields covered during week #1.
6-2. Develop standardized pattern for recording information useful in classroom work.
6-3. Record essential information for various occupations for reproduction to be distributed to all participants

Activity #7 - Introduction to Commercially Prepared Material. Industrial Education Building 223. 10:00 (Devlin) Group discussions.

7-1. Review Commercial Exhibits and Samples.
7-2. Discuss relative usefulness of specific commercial items.
7-3. Critique of strengths and weaknesses of commercial items.
7-4. Develop list of most useful items.

Activity #8 - Evaluate Commercially Prepared Material. Industrial Education Building 223. 2:30. (Devlin)

8-1. Develop an Evaluation technique to compare commercial items.
8-2. Rate commercial items according to Evaluation rating scale developed in 8-1.

Activity #9 - 7:00 Training Alternatives (Herb McMahon - Community Colleges. Ralph Albin - Technical Education).

9-1. Identify one type of training alternatives beyond 10th grade in metalworking occupations.
9-2. Identify requirements of this alternative in prerequisite experiences, personal traits, expected training requirements, etc.

Wednesday

Activity #10 - Initiate or Expand Occupationally Oriented Program. Industrial Education Building 223. 8:00. (Devlin)

10-1. Develop objectives for O.O.I.A. to be implemented.
10-2. Select experiences for O.O.I.A. for implementation.
10-3. Select information for O.O.I.A. for implementation.
10-4. Organize experiences and information for teaching.

Activity #11 - Bob Robison. 3:00

Activity #12 - Training Alternatives - Governor's Conference on Education Open Meeting. Activities Room of the Student Union Building. 7:00

Thursday

Activity #13 - Continue with Activity #10. Industrial Education Building 223. 8:00.

Activity #14 - Evaluate Materials with respect to objectives. 10:00 (Devlin and Stephens).

14-1. Conduct group discussions and critique groups for purpose of evaluating planned Occupationally Oriented Industrial Arts program information and/or lessons in their potential for achieving objectives specified.
14-2. Revise experiences and informational information as necessary to achieve objectives.

Activity #15 - Counseling Techniques. 3:00. (Michael Holz - North County Technical School, St. Louis Co.).

15-1. Identify counseling type activities teacher should perform in Occupationally Oriented Industrial Arts.
15-2. Develop plan for coordinating Counseling Activities with Occupational lesson content.

Friday

Activity #16 - Methods and Techniques for Implementation. Group discussions. 8:00.

16-1. List possible techniques for implementation.
16-2. Compare occupational lessons with specific techniques and rate each technique with probable success.

Activity #17 - Administer Post Test. 1:00.

Activity #18 - Conduct Post-Institute Evaluation. 2:00.

Activity #19 - SUBMIT MATERIALS FOR INSTITUTE REPORTS 3:00.

APPENDIX C

(Letter of Transmittal to Vocational Education Directors)

(Post Card to Vocational Education Directors)

Post Card Survey Instrument to Vocational School Directors

Cover letter

Dear Sir:

Northeast Missouri State University, with the co-operation of the State Department of Education, through EPDA Funds is conducting a pilot program to increase the effectiveness of Industrial Arts teachers in preparing students for Vocational Education Programs. Because this is a pilot project, it has been limited to a specific area of instruction. We are, therefore, soliciting your assistance in helping us to identify potential participants for two week workshop to be held during the summer of 1976. You may lend your assistance by completing the attached post card questionnaire and dropping it in the mail. Your prompt response is requested.

Thank you for your cooperation.

Dr. Leon Devlin
Dr. Peter Sireno
Dr. Robert Stephens

FIRST CLASS
PERMIT No. 23
Kirksville, Mo.

BUSINESS REPLY CARD
No Postage Stamp Necessary If Mailed in the United States

POSTAGE WILL BE PAID BY —

E.P.D.A. Sub-project 2
Industrial Education Building
Northeast Missouri State University
Kirksville, Missouri 63501

ATTENTION: Dr. Robert L. Stephens

Person Responding_____

School_____

School Address_____

Check the programs you have in the metals field within your school curriculum.

___ Vocational Machine Shop

___ Vocational Welding

___ Vocational Sheet Metal Fabrication

___ Other, Please specify._____

List the School District served by your vocational programs.

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

APPENDIX D

(Letter and Survey sent to Vocational Education Teachers)

NORTHEAST MISSOURI STATE UNIVERSITY

KIRKSVILLE 63501
816-665-5121

Division of Practical Arts

February 23, 1976

Dear Colleague:

Northeast Missouri State University, with the cooperation of the State Department of Education, through EPDA Funds is conducting a pilot program to increase the effectiveness of Industrial Arts teachers in preparing students for Vocational Education Programs. Because it is a pilot project, it has been limited to the specific area of instruction identified as "metals."

The project is important to vocational educators because, if successful, it will increase the effectiveness of Industrial Arts teachers in meeting specified vocational objectives as outlined in the 1973 Vocational Education Amendments. (Public Law 92-318). If the Industrial Arts teachers become more effective in meeting these objectives, benefits to the vocational teacher would possibly include a more knowledgeable student, a better directed student who is more likely to stay in the vocational program and in the trade, and a student possessing attitudes more nearly aligned with those of a person compatible within the trade. The intent of the project is not to qualify Industrial Arts personnel to teach vocational subject matter, but to assist them in better preparing their students for success in the vocational field of their choice.

You have been identified as a vocational teacher in the general field of metalworking. You can assist in this project by recording the importance of selected attitudes, knowledge, and skills of your incoming students. A questionnaire is enclosed for this purpose.

Also, please find enclosed a Project Information Sheet which provides greater details on the project.

Please complete the questionnaire and return it in the envelope provided. Note that the envelope is numbered. This number allows the secretary to identify those questionnaires which have not been returned so that a follow-up letter can be mailed. Your questionnaire will not be identified in any manner, except to note whether it has or has not been returned. All questionnaires will be held in strictest confidence and only collective data from all questionnaires are of interest.

Thank you for your assistance.

Sincerely,

Dr. Robert L. Stephens

Assisting Industrial Arts Teachers in Integrating Occupationally-oriented Activities into Their Existing Instructional Programs

Project Directors

Dr. Leon G. Devlin
Ext. 7793

Dr. Peter J. Sireno
Ext. 7208

Dr. Robert L. Stephens
Ext. 3357

VOCATIONAL TEACHER SURVEY

DIRECTIONS: Included below are three categories of concern in the metalworking field. Please indicate the importance that you attach to each item as a characteristic of a beginning student in your vocational class. (In other words, how important is it that he or she possess the characteristic described in the item prior to entering instruction in your class). You may indicate your choices by placing a check mark (✓) in the appropriate box for each item.

In the second set of columns lettered A and I, please indicate whether you consider preparation or development of the corresponding item to be adequate upon the student's entry into your vocational program. Please do not leave any item blank. Thank you.

	no previous preparation needed 0	minimal preparation or development needed 1	moderate preparation or development needed 2	extensive preparation or development needed 3	complete preparation or development required 4	adequate A	inadequate I
CATEGORY OF ATTITUDES:							
An appreciation for quality craftsmanship							
Development of a good work ethic (days work for days pay)							
Acceptance of responsibility							
Dependability							
Integrity							
Safety consciousness							
Cleanliness							
Orderliness							
Willingness to accept constructive criticism							
Willingness to go beyond requirements							
Initiative							
Cooperation							
CATEGORY OF KNOWLEDGE: (knowing)							
Machine and tool nomenclature							
Composition of metals and alloys							
Metrics							
Measurements							
Blueprint reading							
Speeds and feeds							
Threads and threadings, drill sizing, decimal equivalency							
Metalworking occupational requirements							
Metalworking occupational opportunities							
Metalworking occupational benefits							
Educational requirements for metalworking occupations							
Metalworking occupational conditions							
Function and responsibilities of labor unions associated with metalworking occupations							
CATEGORY OF SKILL: (doing)							
Read and interpret technical data							
Hand tool procedures and usage							
Layout and measurement procedures							
Sheet metal procedures and operations							
Forging							
Heat treating							
Casting							
Anodizing, plating and finishing							
Lathe procedures and operations							
Shaper procedures and operations							
Bandsaw procedures and operations							
Cutoff saw procedures and operations							
Milling machine procedures and operations							
Drilling machine procedures and operations							
Grinding machine procedures and operations							
A-C arc welding operations							
D-C arc welding operations							
Mig and Tig welding operations							
Oxy/acetylene welding operations							

APPENDIX E

(Letter and Survey sent to the Industrial Arts Metals Teachers)

NORTHEAST MISSOURI STATE UNIVERSITY

KIRKSVILLE 63501
816-665-5121

Division of Practical Arts

February 23, 1976

Dear Colleague:

Northeast Missouri State University, with the cooperation of the State Department of Education, through EPDA Funds is conducting a pilot program to increase the effectiveness of Industrial Arts teachers in preparing students for Vocational Education Programs. Because this is a pilot project, it has been limited to the specific area of instruction identified as "metals."

This project is important to Industrial Arts Education because Industrial Arts programs can be eligible for vocational education funds if they are made to meet certain vocational education objectives. It is the intent of this project to prepare Industrial Arts metals teachers to better meet these objectives.

You have been identified as an Industrial Arts metals teacher. Therefore, we are soliciting your assistance in determining aspects of instruction which may serve as a basis for in-service teacher instruction. The enclosed questionnaire asks you to record the emphasis you place on specified instructional items within your metalwork classes. The information drawn from these questionnaires will be compiled and used collectively. All will be held in strictest confidence.

Also, please find enclosed a Project Information Sheet which provides greater details on the project.

Please complete the questionnaire and return it in the envelope provided. Note that the envelope is numbered. This number allows the secretary to identify those questionnaires which have not been returned so that follow-up letters can be mailed. Your questionnaire will not be identified in any manner except to note whether it has or has not been returned.

Thank you for your assistance.

Sincerely,

Robert L. Stephens

Dr. Robert L. Stephens

RLS/bb

Enclosure(s)

INDUSTRIAL ARTS TEACHER SURVEY

DIRECTIONS: Included below are three categories of concern in the metalworking field. Please indicate the amount of emphasis each item receives in your classes. You may do so by placing a check mark (✓) in the appropriate box to the right of the item. Please do not leave any item blank. Thank you.

	no attempt to include in instruction 0	mentioned in class but no emphasis 1	minor emphasis 2	emphasized as a major item 3	very heavy emphasis 4
CATEGORY OF ATTITUDES:					
An appreciation for quality craftsmanship					
Development of a good work ethic (days work for days pay)					
Acceptance of responsibility					
Dependability					
Integrity					
Safety consciousness					
Cleanliness					
Orderliness					
Willingness to accept constructive criticism					
Willingness to go beyond requirements					
Initiative					
Cooperation					
CATEGORY OF KNOWLEDGE: (knowing)					
Machine and tool nomenclature					
Composition of metals and alloys					
Metrics					
Measurements					
Blueprint reading					
Speeds and feeds					
Threads and threadings, drill sizing, decimal equivalency					
Metalworking occupational requirements					
Metalworking occupational opportunities					
Metalworking occupational benefits					
Educational requirements for metalworking occupations					
Metalworking occupational conditions					
Function and responsibilities of labor unions associated with metal working occupations					
CATEGORY OF SKILL: (doing)					
Read and interpret technical data					
Hand tool procedures and usage					
Layout and measurement procedures					
Sheet metal procedures and operations					
Forging					
Heat treating					
Casting					
Anodizing, plating and finishing					
Lathe procedures and operations					
Shaper procedures and operations					
Bandsaw procedures and operations					
Cutoff saw procedures and operations					
Milling machine procedures and operations					
Drilling machine procedures and operations					
Grinding machine procedures and operations					
A-C arc welding operations					
D-C arc welding operations					
Mig and Tig welding operations					
Oxy/acetylene welding operations					

APPENDIX F

(Letter and Survey sent to Labor and Management)

NORTHEAST MISSOURI STATE UNIVERSITY

Division of Practical Arts

KIRKSVILLE 63501
816-665-5121

Northeast Missouri State University, in conjunction with the Vocational Division of the Missouri Department of Elementary and Secondary Education, is conducting an H.E.W. project. The primary purpose of this project is to provide industrial arts (non-vocational) teachers with those experiences and opportunities needed to help them plan, develop and introduce occupational information and activities applicable to the metalworking industries into their industrial arts metals classes.

According to the Missouri State Plan for Vocational Education, secondary and post-secondary occupational programs are projected to be expanded and improved over the next five years to accommodate 1) the increase in the number of students, and 2) meet labor market demands.

Your assistance is needed to ensure that the experiences included in the project are relevant and reflect current industrial practices. You may provide input for the project by completing the enclosed form and returning it at your earliest convenience.

Sincerely yours,

Robert L. Stephens
Project Director

RLS/jm

Enclosure

LABOR AND MANAGEMENT SURVEY

DIRECTIONS: Please indicate the emphasis that Industrial Arts (non-vocational) metalworking teachers should place on the development of the following characteristics, knowledge, or general skills for students prior to entering metalworking courses in vocational-technical schools or apprenticeship programs. Please do not leave any item blank. Thank you.

	no attempt to include in instruction 0	mentioned in class but no emphasis 1	minor emphasis 2	emphasized as a major item 3	very heavy emphasis 4
CATEGORY OF ATTITUDES:					
An appreciation for quality craftsmanship					
Development of a good work ethic (days work for days pay)					
Acceptance of responsibility					
Dependability					
Integrity					
Safety consciousness					
Cleanliness					
Orderliness					
Willingness to accept constructive criticism					
Willingness to go beyond requirements					
Initiative					
Cooperation					
CATEGORY OF KNOWLEDGE: (knowing)					
Machine and tool nomenclature					
Composition of metals and alloys					
Metrics					
Measurements					
Blueprint reading					
Speeds and feeds					
Threads and threadings, drill sizing, decimal equivalency					
Metalworking occupational requirements					
Metalworking occupational opportunities					
Metalworking occupational benefits					
Educational requirements for metalworking occupations					
Metalworking occupational conditions					
Function and responsibilities of Labor Unions Associated with metalworking conditions					
CATEGORY OF SKILL: (doing)					
Read and interpret technical data					
Hand tool procedures and usage					
Layout and measurement procedures					
Sheet metal procedures and operations					
Forging					
Heat treating					
Casting					
Anodizing, plating and finishing					
Lathe procedures and operations					
Shaper procedures and operations					
Bandsaw procedures and operations					
Cutoff saw procedures and operations					
Milling machine procedures and operations					
Drilling machine procedures and operations					
Grinding machine procedures and operations					
A-C arc welding operations					
D-C arc welding operations					
Mig and Tig welding operations					
Oxy/acetylene welding operations					

Your Name _____ Organization's Name _____ Address _____

APPENDIX G

(Project Information Sheet)

ASSISTING INDUSTRIAL ARTS TEACHERS
IN INTEGRATING OCCUPATIONALLY-ORIENTED ACTIVITIES
INTO THEIR EXISTING INSTRUCTIONAL PROGRAMS

PROJECT INFORMATION SHEET

PROJECT DIRECTORS:

Dr. Leon G. Devlin
Dr. Peter J. Sireno
Dr. Robert L. Stephens

NORTHEAST MISSOURI STATE UNIVERSITY
Kirksville, Missouri
Division of Practical Arts

Northeast Missouri State University, in cooperation with the Missouri Department of Elementary and Secondary Education Vocational Division, is conducting an EPDA project to provide industrial arts teachers with those experiences and opportunities needed to help them plan, develop, and introduce occupationally-oriented information, activities, and experiences into industrial arts classes.

Research and developmental projects of the past indicate that many innovative vocational educators recognized the importance and interrelatedness of industrial arts to vocational education. With the emergence of the career education concept, this interrelatedness became more apparent and the need to include industrial arts as part of vocational education began to surface. Finally, on December 20, 1973, this important "inclusion" became a reality when the amendments to Public Law 92-318 included specific industrial arts education instruction as part of vocational instruction.

Unfortunately, it became obvious that many industrial arts educators did not possess the necessary experiences needed to effectively implement the objectives of the amendments. As a result, many states have elected not to fund industrual arts education programs until the industrial arts educators have increased their exposure to enable them to comply with the amendments to the Act.

One of the E.P.D.A. priorities for fiscal year 1975 developed by the Missouri State Advisory Committee on E.P.D.A. was in-service development of industrial arts teachers to implement pre-vocational programs.

According to the Missouri State Plan for Vocational Education, secondary and post-secondary occupational programs are projected to be expanded and improved over the next five years to accommodate 1) the increase in the number of students and 2) meet labor market demands. If this goal is to become a reality, it is essential that appropriate and up-to-date occupational information be disseminated to the students making an occupationally-oriented education decision. Therefore, those presently employed as industrial arts teachers must be given the opportunity to develop the minimum professional and technical competencies necessary to effectively implement the pre-vocational program concept.

The primary purpose of this project is to provide the industrial arts teachers with those experiences and opportunities needed to help them plan, develop, and introduce occupationally-oriented information, activities, and experiences into their industrial arts classes.

This project also will serve as a pilot project. It is intended that the results of the project will substantiate the need and desirability for expanding and continuing the in-service activities for industrial arts teachers as proposed in this project.

Objectives of the Project

To increase those competencies of the industrial arts teacher which will enable him to more effectively:

1. Assist individuals in the making of informed and meaningful occupational choices by providing:
   (a) occupational information and instruction pertaining to a broad range of occupations, including: training requisites, working conditions, salaries or wages, and other relevant information.
   (b) exploratory experiences in shops, laboratories, and observations in business or industry to acquaint students with jobs in the occupations included in this purpose.
   (c) guidance and counseling for students enrolled in the industrial arts program and assist them in making informed and meaningful choices in selected occupational fields.
2. Prepare individuals for enrollment in advanced or highly skilled vocational and technical education programs by providing:
   (a) individuals with occupational information and exploratory experience for enrollment in such programs:
   (b) occupational information and exploratory experiences directly related to current practices in industry.

3. Become more familiar with new equipment and technology.
4. Develop a more complete awareness, understanding and appreciation of the world of work.
5. Relate experiences when implementing the pre-vocational education concept.

APPENDIX H

(Commercially Prepared Audio-Visual Materials)

1. Army Occupational Handbook. RPI 975 Oct. 74-GPO: 1974-651-451.

2. Career Education New Perspectives for Industrial Arts. American Vocation Association, 1510 H. Street, N.W., Washington 20005.

3. Career World. Curriculum Innovation, Inc. 501 Lake Forest Avenue Highwood, Ill. 60040.

4. Community College of the Air Force General Catalog 1975-76. U.S. Government Printing Office.

5. 1976 Community Junior, & Technical College Directory. American Association of Community and Junior College-Suite 410, Washington. D.C. 20086.

6. Dictionary of Occupational Titles. 1965, Vol. I-II, Definition of Titles, Third Edition.

7. Directions-A guide for VICA Club Advisors. Vocational Industrial Clubs of America, 105 North Virginia Avenue, Fall Church, VA 22046.

8. Educational Objectives for the State of Missouri. State of Missouri Department of Elementary & Secondary Education, Jefferson City, Missouri 65101.

9. Federal Register/Department of Health, Education, and Welfare. Vol. 38, No. 213, Nov. 6, 1973.

10. General Description of Proposed Project. State of Department of Education.

11. Government '76/The Employment Picture for College Graduates. U.S. Civil Service Commission, Washington, D.C.

12. Griffith, William S. Research Coordinating Unit State Department of Education. Jefferson City, Missouri 65101.

13. Guide to Federal Career Literature U.S. Government Printing Office-1976 Washington D.C.

14. Guidelines for Industrial Arts in Career Education. State of Missouri Department of Elementary & Secondary Education, Jefferson City, Mo. 65101.

15. Guidelines for Occupationally Oriented Industrial Arts Education Program. State of Missouri Department of Elementary & Secondary Education, Jefferson City, Missouri 65101.

16. Handbook for Occupational Advisory Committee Members. Northeast State University, Kirksville, Missouri 63501.

17. How to Form a Club. VICA, 105 North Virginia Avenue, Fall Church, VA 22046.

18. Industrial Arts/A Means for Preparing Yourth to Understand and Contribute to Our Industrial Technological Society. American Industrial Arts Association, 1201 Sixteenth Street, N.W. Washington, D.C. 20036.

19. Lecture Series in Vocational Education. Center for Vocation Education-Ohio State University, 1960. Kenney Road, Columbus Ohio 43210.

20. Library of Career Counseling Films. CFI 2100 Locust Street, Philadelphia, Pennsylvania 19103.

21. A Look at the Metalcasting Industry. AFC-Golf & Wolf Roads, Desplains, Ill. 60016.

22. Missouri State VICA Leadership Contest-Competitive Activities Guide. Vocational Industrial Clubs of America 105 N. Virginia Avenue, Falls Church, VA 22046.

23. Mocare the Missouri Project - Guidelines for Industrial Arts in Career Education. Northeast Missouri State University, Kirksville, Missouri 63501.

24. Occupations Military - Civilian Occupational Source Book. AFVTG Armed Forces Voc. Testing Group, Universal City, Texas 78148.

25. Performance Indicators for Educational Objectives for the State of Missouri - Grade 12. State of Missouri Department of Elementary & Secondary Education, Jefferson City, Missouri 65101.

26. Public Relations Guide for VICA Clubs. Vocational Ind. Clubs of America 105 N. Virginia Avenue, Falls Church, VA 22046.

27. Role of Industrial Arts in Career Education. Voc-Tech. Terminology Washington D.C.: American Vocation Association.

28. VICA Supply Service. VICA Supply Service 11722 Parklawn Drive, Rockville, Missouri 20852.

29. Vocational Industrial Clubs of America, Inc. Membership Roster. Vocational Ind. Clubs of America, Inc,, 105 N. Virginia Avenue, Fall Church, VA 22046.

APPENDIX I

(Pretest and Post-test)

OCCUPATIONALLY ORIENTED

INDUSTRIAL ARTS PRACTICUM

NMSU EPDA Subproject 3, 1976

Instrument #_____ Name_____

In the blanks preceding the following items, place the letter(s) corresponding to the educational program(s) of which the item is an objective.

A. Industrial Arts
B. Occupationally Oriented Industrial Arts
C. Vocational Education

_____ 1. Develop an insight and understanding of tools, machines, materials, processes and terminology as they relate to the production and servicing aspects of industry.

_____ 2. Acquire an awareness of the world of work, to explore varied occupations, and to become occupationally oriented.

_____ 3. Retrain persons for a different occupation.

_____ 4. Develop a salable skill in a specific occupation.

_____ 5. Interrelate the content of industrial arts with other school subjects in the curriculum.

_____ 6. Develop basic skills in the safe and proper use of industrial materials, tools, machines, and processes.

_____ 7. Upgrade persons within a specific occupation.

_____ 8. Develop an understanding of a variety of careers and their requirement.

_____ 9. Develop problem-solving and creative abilities relating to the tools, machines, materials, processes and products of industry.

_____10. Discover and develop abilities, aptitudes, and interests related to the technical pursuits and applied sciences.

11. List occupational attitudes which can be identified and nurtured in an Occupationally Oriented Industrial Arts program.
Example: An appreciation for quality craftsmanship.

12. Identify categories of occupational information which should be provided in an Occupationally Oriented Industrial Arts program.
Example: Entry level educational requirements.

13. List the specific occupations which may be identified in the following fields.

Sheet metal.

Foundry.

Machining.

Welding.

14. What methods or techniques do you believe should be employed in presenting information about the world of work.

15. What are the activities in which you believe the students should participate to strengthen their knowledge and understanding of the world of work.

16. What experiences do you believe the student should have to strengthen his understandings of the world of work.

17. List alternatives students may select after completing your O.O.I.A. metalworking class in preparation for employment.

18. List the two criteria which must be met to make an industrial arts program eligible for Federal funding under the 1974 amendments to the Vocational Education Act.

19. What do you perceive as being the unique responsibilities of an Occupationally Oriented Industrial Arts teacher?

OCCUPATIONALLY ORIENTED

INDUSTRIAL ARTS PRACTICUM

NMSU EPDA Subproject 3, 1976

Instrument #_____ Name_____

In the blanks preceding the following items, place the letter(s) corresponding to the educational program(s) of which the item is an objective.

A. Industrial Arts
B. Occupationally Oriented Industrial Arts
C. Vocational Education

____ 1. Develop an insight and understanding of tools, machines, materials, processes and terminology as they relate to the production and servicing aspects of industry.

____ 2. Acquire an awareness of the world of work, to explore varied occupations, and to become occupationally oriented.

____ 3. Retrain persons for a different occupation.

____ 4. Develop a salable skill in a specific occupation.

____ 5. Interrelate the content of industrial arts with other school subjects in the curriculum.

____ 6. Develop basic skills in the safe and proper use of industrial materials, tools, machines, and processes.

____ 7. Upgrade persons within a specific occupation.

____ 8. Develop an understanding of a variety of careers and their requirement.

____ 9. Develop problem-solving and creative abilities relating to the tools, machines, materials, processes and products of industry.

____10. Discover and develop abilities, aptitudes, and interests related to the technical pursuits and applied sciences.

11. List occupational attitudes which can be identified and nurtured in an Occupationally Oriented Industrial Arts program.
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16. What experiences do you believe the student should have to strengthen his understandings of the world of work.

17. List alternatives students may select after completing your O.O.I.A. metalworking class in preparation for employment.

18. List the two criteria which must be met to make an industrial arts program eligible for Federal funding under the 1974 amendments to the Vocational Education Act.

19. What do you perceive as being the unique responsibilities of an Occupationally Oriented Industrial Arts teacher?

APPENDIX J

(List of Industrial, Labor and Educational Consultants)

CONSULTANTS

John Miller
Vice President of Production
Nooter Corporation
1450 South Third St.
St. Louis, MO 63166

Richard Querry
St. Louis Ship
611 East Marceau St.
St. Louis, MO 63111

Neal Losse
Director of Industrial Relations
ACF Industries Inc.
2840 N. Spring Ave.
St. Louis, MO 63107

Bruce Buehig
Banner Iron Works-
Green Foundry Division
5380 Blacher Blvd.
St. Louis, MO 63120

Jack D. Robb
Training Manager
McDonnell Douglas Corporation
P. O. Box 516
St. Louis, MO 63166

David E. Casson, Sr.
Business Manager - Secretary Treasurer
Local 27 AFL-CIO
International Brotherhood of Boilermakers,
Iron Ship Builders, Blacksmiths,
Forgers & Helpers
1547 S. Broadway
St. Louis, MO 63104

Dr. Frank Drake, Coordinator
Vocational Education
Dept. of Elementary and Secondary Ed
P. O. Box 480
Jefferson City, MO 65101

Mr. Robert Robison, Director
Industrial-Technical Education
Dept. of Elementary and Secondary Ed
P. O. Box 480
Jefferson City, MO 65101

Mr. B. Eugene Brightwell, Supervisor
Industrial Arts
Dept. of Elementary and Secondary Ed
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Mr. Ralph T. Albin, Supervisor
Technical Education
Dept. of Elementary and Secondary Ed
P. O. Box 480
Jefferson City, MO 65101

Mr. Dwight Hart
165 Duke Dr.
Florissant, MO 63034

Mr. Michael Holz
821 Gerard
Ferguson, MO 63135

Mr. Herbert McMahon
20 DiFranco
O'Fallon, MO 63366

APPENDIX K

(Worksheets)

OCCUPATIONAL SUMMARY FORM

OCCUPATION: _____

TYPE OF FIRM USING OCCUPATION _____

CHARACTERISTIC DUTIES OF EMPLOYEE

SPECIAL SKILL REQUIREMENTS OF THE OCCUPATION

CONDITIONS UNDER WHICH RESPONSIBILITIES MUST BE CARRIED OUT

OCCUPATIONAL HAZARDS INHERENT IN THE JOB

PERSONAL APTITUDES AND/OR TRAITS DESIRED BY EMPLOYER

SALARY AND BENEFITS

UNION OR WORKER ORGANIZATIONAL REQUIREMENTS

OCCUPATIONAL STABILITY AND OPPORTUNITY

EDUCATIONAL REQUIREMENTS

SPECIAL REQUIREMENTS PLACED ON WORKERS (Such as owning tools, etc.)

WORKER LIKES AND DISLIKES ABOUT OCCUPATION

CE 009 219